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ORIGINAL ARTICLES

PRESIDENT'S ADDRESS BEFORE THE FIRST INTERNATIONAL ORTHODONTIC CONGRESS*

BY WILLIAM C. FISHER, D.D.S., NEW YORK, N. Y.

THIS year marks the silver anniversary of the American Society of Orthodontists, and, therefore, may be construed as the silver anniversary of the specialty, for with the inauguration of the American Society one can rightfully conclude that the science, art, and practice of orthodontics became a specialty.

As the humble figurehead and spokesman for this great specialty, let me today in the name of America, the American Society of Orthodontists, and the American component societies, extend to our foreign confreres, both to those present and to those unavoidably absent, the right hand of fellowship, love, and international understanding. We regret that in the years that followed the cruel war the finances of some European countries have been so completely wrecked that many of our confreres from over the Pond have not yet been able to recover sufficiently to indulge in a visit to us at this time. We truly hope that a great concert of nations will very soon heal this one great wound so that it will be possible for scientific men to travel throughout the world and to receive the benefits of conferences. In anticipating that great day, let us hope that our American colleagues will find it possible to attend in greater numbers in the future the meetings of the various European societies and more particularly the Second International Orthodontic Congress, which should be held in Europe.

The influences which aided, if not controlled, the growth and development of orthodontia in America are worthy of study at this time, for those

*President's Address before the First International Orthodontic Congress, New York City, August 16-20, 1926.

influences have changed but little considering the period covered, but have grown wonderfully. We should not overlook the work that was done by many pioneers prior to this last period of twenty-five years and due credit must be given to these men. But even so we must not for a moment nor in any manner detract from the great record of the teachers of the past twenty-five years. We must acknowledge the ability and efforts of such masters as Edward H. Angle, Calvin S. Case, Victor Hugo Jackson, E. H. Bogue, and the earlier and older students of these men, who themselves today must be considered the pilots and teachers who will control the future of orthodontia for the coming years.

Just as we today look back over the period of a generation and pay homage to these teachers, so let *us* work, plan, and so direct our energies that the young men of today, who within another generation will look back and make a survey of that period through which we are now passing, will find our work well done, and our investigations properly and nobly made. Further, let us see to it that they shall be unable to point a reproachful finger at any of us, and let us hope that they may take time to pay such respect and offer such commendation as our efforts in their behalf may merit.

America's opportunity and duty in the field of world orthodontics is probably the most outstanding figure on the horizon of the future; it is in this field that we should engage in directing the work and progress in the teaching of orthodontics. We have a most unusual opportunity to assist the able and willing teachers in the foreign fields and to expand *their* individual influences.

The mere fact that there are not a greater number of men in the several countries of Europe practicing the specialty of orthodontia *exclusively* does not necessarily indicate that the concept of orthodontics in the minds of these men and their colleagues is not equal to ours in America. It would rather point to the fact that the conditions which have been so favorable to the advancement of the specialty in America were not to be found in these several countries, else the students of some of our eminent teachers here in America who returned to their homes in the foreign field would have been able by now to have expanded to a marked degree both the practice and the number of practitioners.

It is very encouraging to note the great interest and progress of the last decade; and this interest and this progress are indicative of greater work and greater advancement. When we see how the societies in France, Germany, and Great Britain have grown in number and interest within the last very few years, how the European Orthodontological Society, so severely crippled during the World War, has taken on new life and is endeavoring to "*carry on*," we can look forward with great expectations for the results of a Second International Orthodontic Congress that could very easily be held within the next three or four years in one of the larger European cities.

Particularly here in America we have been so absorbed with the development of the mechanics of orthodontia, with the growth of the number of practitioners, and with the number of cases we have been enabled to treat, that I fear we have not given sufficient thought and encouragement to re-

search work. It is only within recent years that genuine effort in this direction has been crowned with any character of success. Yet in our enthusiasm we must be careful that, in encouraging true and scientific research, we guard against the adoption of any particular method, or adherence to any single doctrine or dogma heralded by its supporters as the final solution in world orthodontics.

This does not prevent us from honoring a man for his achievements, whether or not we be willing to accept his conclusions. Again it would appear that some of our best minds have spent most of *their* energy and *our* time to prove that the work of their colleagues was of no value, instead of allowing each individual the privilege of his own investigations, convictions, and conclusions.

That teacher or investigator who dares to question for one moment his fellow-men and endeavors to impress upon them that all scientific knowledge and progress which does not emanate from him is of no value, hampers our progress. Probably his very energy and work may retard rather than advance the specialty. On the other hand, the true investigator and student whose conclusions are questioned should not be discouraged. He rather should be benefited by the adverse criticism which his work may call forth. Only in the interchange of ideas can we ever expect progress, and it is more than encouraging to see how the need of this interchange of ideas is producing sectional orthodontic societies wherein the members may gather more frequently than was ever possible in the past. These new organizations, particularly in America, are serving a double purpose; they are bringing into frequent contact men of several localities, permitting an intimacy that breeds that most wonderful of things, "true friendship," and permitting differences of opinion to be expressed without the generation of unfriendly feelings. This is not impossible in the larger societies, convening only once a year, but it is not so easily accomplished. It is to be hoped that the European Orthodontological Society may in time obtain that same position and influence in coordinating the efforts of the several national societies in Europe, as the American Society stimulated and coordinated the efforts of the sectional orthodontic societies in America.

The smaller societies serve also as a training school for the young orthodontist. His timidity is overcome and his efforts in demonstrations, clinics, and essays are stimulated and encouraged. Thus he very frequently finds that he can easily develop excellent material for the larger meetings. As these two so-called parent bodies in America and Europe serve as guides in coordinating influences in the smaller societies, so the International Orthodontic Congresses should in the future serve to coordinate and stimulate the orthodontic minds and efforts of the entire world.

It is quite evident from available statistics that conditions in America must have been more favorable than in Europe, when one realizes that in the United States there are nearly four hundred and fifty men practicing the specialty of orthodontia exclusively and that in the whole of Europe there is hardly a score of men who can be classed in the same manner. Think of fifty-four exclusive practitioners in this City of New York, as compared

with three in England, three in France, and three in Germany! Of course, these figures may not be absolutely correct, but they are accurate enough to call attention to the discrepancy in numbers.

Additional evidence that conditions must have been far more favorable in America than abroad can be observed in Canada. In the Dominion there are twenty-two exclusive practitioners. This larger number can be explained only by calling attention to its close proximity to the United States. Canada naturally would respond to the same influences felt in the States, or reflect the same conditions.

As further evidence of more favorable conditions here in America, we may record the fact that over six years ago the Surgeon-General of the United States Army was easily convinced of the great importance of orthodontic training for dental surgeons in the army. He saw the necessity of equipping them not only to care for the children of officers, but more especially to do maxillofacial work. He therefore detailed every year for a period of three years two officers of the Dental Corps to take a full-time course at an orthodontic school, thereafter placing them in advantageous points either to practice the specialty or to teach it in the Army Medical and Dental Service School at Washington, D. C. This government recognition and endorsement of our specialty is further evidenced by the detail of all these specially trained men now on active duty to attend this Congress.

In endeavoring to take credit, if there be any credit due for this favorable condition in America, one must not fail to record the historic fact that, about twenty-five years ago, Dr. Edward H. Angle established a school for the teaching of orthodontia. True, it was a very small start and a very small school, but it persevered; and from its influences sprang other schools, some of which have been criticized as being conducted for the financial benefit of a few. Let us hope, nevertheless, the good they all do will outweigh any evil that may spring from them.

At the same time, one must not overlook the great influence of the graduates of this pioneer school, together with few others, when they determined to limit their practice *exclusively* to that of orthodontia. I believe that this has had a greater and a more favorable influence upon the wonderful development of the specialty in America than has any other one factor. Dr. Angle and a number of his very early graduates contended that the only way in which the specialty could be recognized by the dental profession as a specialty was through the men confining their work *exclusively* to orthodontia. The determination of this first little group no doubt hastened this recognition. It was probably over a decade before orthodontia could really have been classed as a specialty and so recognized by the general profession. Today there is no more dignified, no securer specialty in dentistry than this one of orthodontia.

There are present at this meeting men from Europe who, although they are not practicing the specialty exclusively, are equally as well recognized as specialists in this wonderful branch of dentistry by colleagues in their respective cities and countries. But if enough of them should have the courage to launch into the specialty exclusively, as did these pioneers in America, I

firmly believe that they would very soon find conditions establishing themselves as favorably there as we believe they have been established in America. Greater and more rapid advancement can be made when *all* one's efforts are centered on *one object*.

Not all of these four hundred and fifty specialists in America began exclusive practice immediately after their graduation from one of the orthodontic schools. On the contrary, many of them felt compelled to return to their homes and to continue for an indefinite period the general practice of dentistry along with that of orthodontia. But it must be said to their credit that they gave up entirely general practice as soon as they possibly could. The very great majority of these four hundred and fifty men either launched immediately into the exclusive practice or else did so within a period of less than five years after their graduation from an orthodontic school.

There is still another problem I wish to discuss before concluding—an American problem certainly, and perhaps discussion will indicate that it is a world problem too. I mean the question of caring for the teeth during the period of orthodontic treatment. I think it is a safe average if I establish a period of two years as that which will cover orthodontic treatment. Few, if any, of our mixed dentures can be dismissed under a period considerably longer than that. When we consider the number of cases that must necessarily remain under treatment for five or six years, I believe that the before-mentioned average of two years is an unusually conservative one. For argument's sake, I think we may look upon it as covering a period of three years.

Those three years in which a child is under orthodontic care are also the years in which the teeth are quite vulnerable to the attack of caries. It is during that very period that defects in the sulci and grooves of the teeth easily develop rapid caries. At present there is apparently a great movement in America, brought forward by a group classing themselves as specialists in preventive dentistry, to use what would appear to be almost radical methods for the prevention of caries in these particular parts of the teeth.

Can this method succeed unless *correct occlusion exists*? And if it does not exist, can any of its efforts be worth while until the services of the orthodontist have been employed? Emphatically *No*. Without a correct and a functioning occlusion, all efforts at eradicating or preventing caries will be either futile or nearly so. Not that other conditions may not be present or later develop that will produce caries in a denture considered in normal occlusion, but at least it is not to be expected. Nineteen years ago William G. Law, the first president of the European Orthodontological Society, in his presidential address said, "Do not forget that occlusion is the basis of all orthodontic operations, yet while still remembering *that*, keep also in mind that there are other very important points to be considered and weighed seriously."

But that is hardly a problem for *our* discussion at this time. The real problem is not: Will we care for the teeth during these years? but, *Who* is responsible for them during orthodontic treatment? Probably not more than 50 per cent of the cases treated by the orthodontists in America are ever referred to them by the general practitioner of dentistry.

Who is responsible for the care of the teeth of the child referred by a general practitioner? The orthodontist, particularly he who is in the *exclusive* practice, contends that it is a divided responsibility, resting largely upon the shoulders of the general dentist who refers the case. They refuse to care even for incipient caries, which very frequently could be checked by thorough cleansing of the pit or groove and insertion of a very thin mix of cement. But, no. He considers that it would be trespassing on the rights and prerogatives of the general practitioner, and refers the cases back to him. Here we so often have delay in obtaining the satisfactory appointment, until carious action has probably destroyed quite a little tooth substance and, as frequently happens, some of the cusp, so that in the end we have to call for a carved restoration. In the opinion of the writer, it would be far better did the orthodontist assume a little more responsibility and place what might be termed a prophylactic cement filling, which would probably check all caries throughout the entire orthodontic period.

In the other 50 per cent of the cases, namely, those which come into the practice through reference of the parents of your patients, the responsibility is probably somewhat greater. While the same courtesy should be extended to the family dentist in these cases as is extended when the case is referred by him, I believe that the responsibility is not in these cases one of equal division, but is preeminently upon the shoulders of the orthodontist. For he may not have as cordial a cooperation with the family dentist in such cases as he would have when the case was referred by the dentist himself.

The writer contends that, so far as caries is concerned, most children under orthodontic treatment should be and are better cared for and probably have less caries than those that are not under orthodontic treatment. But he wonders if some of the censure that the general practitioner has heaped upon the orthodontist in the past regarding the severe caries during orthodontic treatment has not been, to some extent, because he has stood aloof and refused to do anything but direct the teeth into correct alignment.

Nevertheless, after all is said and done, the responsibility of the orthodontist to his patient is much larger, much greater than merely that of placing the teeth in correct alignment and occlusion. It is that, when his orthodontic work is finished, the teeth will not have been the subject of any greater amount of caries than they would have been had they not been under his care.

Let us take to our hearts a lesson—no lesson can braver be—
From the ways of the tapestry weavers, on the other side of the sea.
Above their heads the pattern hangs; they study it with care,
The while their fingers deftly move, their eyes are fastened there.
They tell this curious thing, beside, of the patient, plodding weaver:
He works on the wrong side evermore; but works for the right side ever.
It is only when the weaving stops, and the web is loosed and turned,
That he sees his real handiwork, that his marvelous skill has learned.

* * * * *

The years of man are the looms of God, let down from the place of the sun,
Wherein we are ever weaving, till the mystic web is done.

Weaving blindly, but weaving surely, each for himself his fate,
We may not see how the right side looks; we can only weave and wait.

But looking above for the pattern, no weaver need to fear;
Only let him look clear into Heaven—the Perfect Pattern is there.

* * * * *

(Anson G. Chester.)

DISCUSSION

Dr. J. H. Badcock, London.—It is a great honor, as well as a great responsibility, to reply on behalf of my European colleagues to your stimulating address, and the responsibility is the greater because I know so little of countries other than my own.

If, therefore, I should say anything which may seem to them inappropriate or omit to say what may seem of importance, I must crave their pardon.

You have referred to the World War. The memory of that ghastly time is branded even more deeply on the hearts of us Europeans than on your own, and with an intensity of hope even deeper than yours, we peer yearningly into the future in the endeavor to desecrate the beginnings of an era of corresponding peace, and wistfully we turn our eyes to America, believing that only with her help is there probability of achievement.

You have referred, sir, as among the pioneers of Orthodontics to the eminent names of Angle, Case, Jackson, Bogue, being naturally most familiar with the work of your own countrymen. May I add those of Campion, of England, and Grevers, of Holland? Were not my ignorance of other languages than English so profound, it may be that I ought to mention many others whose contributions have been as valuable and distinguished.

Another matter to which you have drawn attention, Mr. President, is the greater tendency in America as compared with Europe, to practice orthodontics exclusive of general dentistry. The Americans are well known as specialists in specialization. While it is doubtless true, sir, as you suggest, that the specialist should be able to attain to the very highest efficiency and facility in his art, there may be something to be said on the other side. It cannot be denied that inasmuch as every specialist deliberately narrows his field of action, there is an unconscious tendency to narrow his field of vision, too, to lose his sense of proportion, to fail to see the wood as a whole because his attention is concentrated on the individual trees, and so for his own work to assume an importance in his eyes beyond its real value. Probably the community will be best served when every dentist has a working knowledge of orthodontics whereby he will be able to recognize in their early stages and so to prevent deformities before they arise, and to treat at any rate the simpler cases when circumstances make it desirable and when in every district there is available a specialist to whom the general practitioner may refer such patients as he may be unwilling or unable to deal with himself. It will be for the specialist to remain the pioneer and the expert, and he will be none the worse if his ranks be recruited from those of the general practitioner.

Only one thing more will I mention, but though the last by no means the least, the cultivation of professional spirit among us, the recognition that the advancement of our art and science should be our constant aim only in so far as they are regarded as means to an even higher end—the greatest good of our patients; the recognition that we are all members of one body having this ideal in common, and that we owe each other loyal help and not disloyal criticism, that the goal may be reached by many different ways, and that it is the goal and not the path that matters.

I fear, sir, that I have said over again only too clumsily what is so poetically expressed in your most apt and delightful peroration.

In the name of the European members of this Congress I wish to thank you for the able and thoughtful address which you have just given us, and the magnificent welcome with which you have received us.

Dr. B. E. Lischer, St. Louis, Mo.—I am sure that we can heartily endorse the main arguments of the president's splendid address. His plea for a broader vision on our part and the wholesome democratic attitude he assumes are very commendable.

Though our early organization into a specialty was difficult and though our achievements are considerable and a just cause for pride, the rapid extension of orthodontic

service to the masses has now begun; and the problems which this extension brings with it imposes a very great obligation upon us. Any widespread extension of orthodontic service without the best professional guidance may in the end prove disastrous; and an effective extension of this service can only follow if it is made an integral part of public dental-health programs.

Orthodontic societies, should therefore seek affiliation with general dental societies and health movements, because such contact will afford larger opportunities for cooperation and insure a more liberal and better balanced growth for the art in the future. Orthodontics is not yet recognized as a necessary part of oral health-service; in present-day practice it is being supplied in terms of a luxury.

Technically, general dentistry may be said to have arrived at its full stature; educationally, it has been admitted within the portals of our universities and has perhaps reached the adolescent period of its growth; clinically and scientifically, it needs to more fully utilize its opportunities. The same applies to the special branch of dental orthopedics. Its future development as a worthy professional pursuit should be a matter of great concern to every one of us.

Practically every orthodontist acquires an education in clinical dentistry prior to his entry into the profession and is, therefore, familiar with and able to observe the varying degrees of immunity and susceptibility to dental caries. It is generally recognized that the presence of orthodontic appliances in the mouth does not promote oral cleanliness, and instances occur in which susceptibility to caries seems to be increased when they are applied. But it is worth noting that in the mouths of immune individuals, even where laxity in oral hygiene continues despite our very best efforts at correction, immunity endures. Why this is true we cannot say, but the careless criticism which is occasionally directed at orthodontic treatments is not always justified.

The solutions of this and other problems are not merely our concern, nor do they lie entirely within our own restricted sphere; they are equally the concern of the pathologist and clinician and it is only through the cooperation of all that final solutions may be achieved.

Personally, I am optimistic about the future of orthodontics. Twenty-five years hence, when our golden anniversary will have arrived, I venture the prophecy that most of the suggestions of our president will have been adopted; that if we will but follow the ideals and emulate the honorable traditions of the great and noble art of healing, our beloved specialty will reach its maturity: and that the unmerited attitude which many still assume—that it is a step-child in the dental household—will have disappeared from the hearts of men.

ADDRESS OF WELCOME TO FIRST INTERNATIONAL ORTHODONTIC CONGRESS

BY AUGUSTUS S. DOWNING, A.B., A.M., LL.D., NEW YORK
(Commissioner of Professional Education)

LADIES and Gentlemen: I wonder whether you ever have the experience of having your blood run cold preparatory to stage fright. That is the way I always feel when I have to speak before a body of men and women scientists like yourselves.

I am deeply honored this afternoon, first, because I have been appointed by His Excellency, Governor Alfred E. Smith, to be his representative at this First International Orthodontic Congress, and to represent Alfred E. Smith and the great State of New York is a responsibility in itself; and, second, because I have the honor of extending greetings in behalf of His Excellency, and in behalf of this great State, to the specialists from foreign countries and to our visiting brothers all over the Union.

I may say that Governor Smith, more than any other executive I have known, and I have known them for the last forty years, is deeply concerned in every profession that tends to the conservation of the public health of this great State and this, our nation. He has shown this interest on a number of occasions. Last winter, for example, he gave his executive signature and approval to the Amendment of the Medical Practice Act, for which we have been striving for the last twelve years, with a view to putting out of business charlatans, quacks, and illegal practitioners of medicine. He did this in spite of all the subtle forces of that body who prey upon the public, their ignorance and their credulity, could bring opposition to bear upon the Legislature and upon the Governor himself.

When he heard of this Congress and wanted to know what it was all about, and he was told, he said, "Well, I want you to go down there and tell them that I am deeply interested in everything that they are doing."

Dentistry has, in the past few years, more than ever come into her own as one of the most important and effective forces operating for the conservation of public health. Whether dentistry be a branch of medicine, as some regard it, or whether it be differentiated as a science of its own, is not material. The fact remains that the services which these two professions render in public health service are so closely allied and interwoven, that the one cannot be divorced from the other.

Preventive medicine and preventive dentistry, which are the watchwords of both professions at this time, must go hand in hand. "As unto the bow the cord is" may be paraphrased "As unto preventive medicine so is preventive dentistry."

As medicine has progressed as a science in the last few years, in training, or interest, or adaptability, specialists have come into being. The internist, the oculist, the surgeon, each confines his practice, his study, and his research to the perfection of that specialty to which he is devoting his life. Naturally, as dentistry has advanced from an art largely dependent upon mechanical skill into a science depending upon the knowledge of pathology, histology, bacteriology, as well as of teeth structure, specialties in the science of dentistry have inevitably come into being.

You gentlemen are concerned with a specialty which may be characterized as basic to the science of dentistry as well as basic to a condition of good health. Correct mastication is a prerequisite to good health. Food and drink undergo their first change in the mouth and without proper preparation and salivation the proper assimilation of the food necessary to convert it into blood and tissue must be handicapped, obstructed, and perhaps entirely nullified.

The specialty which you represent, as I see it, lies at the base of the science of dentistry and really, it is noteworthy that this First International Orthodontic Congress is held in this metropolitan city, the great center of wealth, the great center of professional service of the western hemisphere, and that men of your reputation have come from foreign countries and from all parts of the Union to exchange views upon and to discuss the underlying principles of this most important specialty.

Your profession, your specialty, and medicine are closely allied, one dependent upon the other. It need only be thought of as a convincing proof of this that the relation between pediatrics and orthodontia is so close that they are inseparable. At the time that the child's mouth is in a formative period or state, the orthodontist must take his part with the pediatrician to see to it that the occlusion is proper and that the food which the child receives is of proper character. The pediatrician and the orthodontist must work together, then, in the earliest stages of childhood to the end that the grown man and woman may perform their best services to the state and to the nation.

Ladies and gentlemen, you may well understand why Governor Smith, through me, extends to you a most cordial welcome and why as Deputy Commissioner of Education I bring to you greetings from the Board of Regents of the University of the State of New York for all our foreign friends and visitors and for the representatives of dentistry in whatever specialty they may be engaged, for the Board of Regents, as you know, have much to do and have done much for the progress of dental education and the advancement of right dental practice not only in this state but throughout the Union. Therefore, ladies and gentlemen, I repeat once more that it is both a great honor and a great pleasure for me to represent His Excellency the Governor, as well as the Board of Regents in extending to you a most cordial welcome, with the confident assurance of both the Governor and the University of the State of New York that Dr. Fisher, the President, and his coadjutors in orthodontia in this great city will show that New York City and New York State know how to extend to you their very best and richest hospitality.

RESPONSE TO ADDRESS OF WELCOME TO THE FIRST
INTERNATIONAL ORTHODONTIC CONGRESS

BY DR. LEUMAN M. WAUGH, NEW YORK, N. Y.

MR. PRESIDENT, Official Representative of His Excellency the Governor, Honored Guests from Abroad, and Ladies and Gentlemen: It is indeed a rare privilege to be permitted to respond to this official address of welcome from His Excellency the Governor of the State of New York. Hereabouts it is a rare honor to have a professional body similarly recognized.

We want the representative of the Governor to say to him that we appreciate most highly the special attention which he has given us and that it will serve as a stimulus to us in our deliberations to still more live up to our aim to fill a little niche, to do more in our efforts for the people.

It seems fitting that this first Congress should be held in the City of New York because here we feel that New York is perhaps as much a cosmopolitan city as any city in the world. We feel that no matter from what corner of the earth you come, if you look about you, you will find natives of your land here at home contributing to the great activities and success of this, our largest city. We feel also that it is fitting because there is here a greater number of exclusive practitioners of the specialty of orthodontia than at any similar area of the world and we are eager to have you bring us the much you have to compare with what we have so that together we may bring forth something in a spirit of science that will be of mutual benefit.

I know that all our deliberations will come forth in the spirit of science because there is that magnetic influence which melts together, which fuses, which subjugates professional, personal, and even national differences, and as we meet here in the spirit of science, may we evolve something wholeheartedly in greatest cordiality for the benefit of the specialty which we practice.

We feel that the Governor, in having selected the particular representative whom he has sent, chose very wisely because in his official capacity, Dr. Downing, through the eighteen years in which he has been active in educational work in this State, much of the time has devoted attention to the professional education and because of that duty he has been put in a unique position, and I have said frequently and will say again today that there is not within the ranks of dentistry an individual who has contributed so much to the uplift of dental education and dentistry—he, together with one other man not a dentist, has in my opinion done more for dentistry than any dozen dental schools, and to have him come to us as the Governor's representative seems particularly fitting.

Perhaps what I am going to say is more for his ear than for the Governor, but it is the same official family and we feel that a little expresion of our

feelings toward education as it relates to orthodontia might at this time not be amiss.

We all know the unpretentious mechanical beginning of orthodontia and we are not ashamed of it. It seemed to be the only way it could begin, and through the twenty-five years of its existence, there has been no real concerted effort on the part of educational institutions to put orthodontia as a specialty on the dignified, scientific basis the specialty deserves. It is only in the last few years that serious courses have been offered of any important purport or promise by our universities and today there are a number, seven or eight, universities offering graduate courses in orthodontia of sufficient length and intensity, some of them leading to a special degree, fitting the man on graduation for specialization. I want to express the hope, so that it may go to the University of the State of New York, the official organ, that we hope there will before long be prescribed courses leading up to specialization. We believe that the old standards have done well in their time, but the day has come and science is sufficiently advanced in this specialty, and orthodontia has reached a place of dignity, and importance, and service in which a prescribed course should be outlined, which course will be required before the practitioner, the general practitioner, is entitled to announce himself as a specialist and embark on special practice.

We know that if the University of the State of New York is convinced of the importance of this, through Dr. Downing, they will take a sympathetic stand and follow through in the dogged manner which has met strenuous objection in the days past, and we look for the day when the Governor of our State may sanction a special graduate training for men for preparation for specialization in orthodontia and that a man not licensed to practice that, may not do so until he takes a special course and passes an examination to be licensed.

We hope that this will spread to all branches of dentistry and medicine. It seems to be the next step needed in all branches of health service. The stimulus that comes from this recognition I am very mindful of.

In closing I want to reiterate that we desire that the Governor be informed that we feel deeply honored because of this special attention. We want him to know that it will stimulate us to better endeavor in our efforts to contribute to the health, and efficiency, and happiness of our fellow man.

TISSUE CHANGES INVOLVED IN TOOTH MOVEMENT*

BY DR. A. LEROY JOHNSON, J. L. APPLETON, JR., L. S. RITTERSHOFER,
PHILADELPHIA, PA.

THE following is a report of an investigation carried on at the Dental School of the University of Pennsylvania during the year 1925-26. The investigation was undertaken to ascertain the nature of the tissue changes resulting from tooth movement by means of an orthodontic appliance. Such an investigation serves two purposes: First, it enlarges the concept of the influence of the orthodontic apparatus; second, it provides a record to be utilized by other investigators in this field. The report here given is not worked out in the detail its importance demands. In the near future a more exhaustive exposition will be published. While the data here presented are suggestive, definite conclusions should not be drawn until they are substantiated by further experimentation.

The *Macacus rhesus*, an Indian monkey commonly kept in zoological gardens, was the animal available for our experimentation. They are very hardy and so are well adapted for scientific work. Three animals were used. It was not possible to determine their exact ages, but the first one to which we adjusted an appliance was approximately five years old; the other two from two to three years old.

The maxillary incisors in both animals were the permanent ones.

All three animals were subjected to the tuberculin test. The first animal was free of any reaction, but the second and third had tuberculosis.

A balanced diet was maintained throughout the time the appliances were being worn.

Fig. 1 shows a model upon which an unsuccessful attempt was made to construct an apparatus. Though a very poor model, it is exhibited here to show the nature of the denture, but more especially to record the relative positions of the two maxillary incisors before the appliance was adjusted.

Fig. 2 shows the appliance that was adjusted to the maxillary teeth of the first animal. Base wire 0.038 of an inch in diameter. The auxiliary spring, gold-platinum wire 0.020 of an inch diameter, soldered to the base wire with 14-k gold solder. The force exerted at the tip of the spring when it is moved back to a position beneath the base wire is 2 oz., according to the report of Dr. Irish, of Pittsburg, who made the readings upon an instrument devised by himself for this purpose.

The appliance was cemented to place under ether anesthesia. A band with a lingual spur was adjusted to the left first maxillary incisor to further stabilize the base wire. The pressure from the auxiliary spring was transmitted to the right first maxillary incisor at the gingivus.

*Read before the First International Orthodontic Congress, New York City, August 16-20, 1926.

At the end of a period of twenty-six days the first animal was killed by ether anesthesia; the mandible was removed, and a photograph was made of the occlusal view with the appliance in place. Note degree of tooth movement. (Fig. 3.)

The maxilla was then divided into three blocks; fixed in Zenker's solution; decalcified in HCl; embedded in celloiden; cut serially, and stained by hematoxylin and eosin.

The sections were cut longitudinally (sagittally) in a labiolingual direction through the center of the pulp of the tooth.

In both animals the controls are from sections through the left first maxillary incisor cut in the same manner as in the experimental tooth, i.e., through the right maxillary incisor. That this means of control has proved satisfactory is evident from a comparison of these sections with those of the third animal to which no appliance was adjusted.

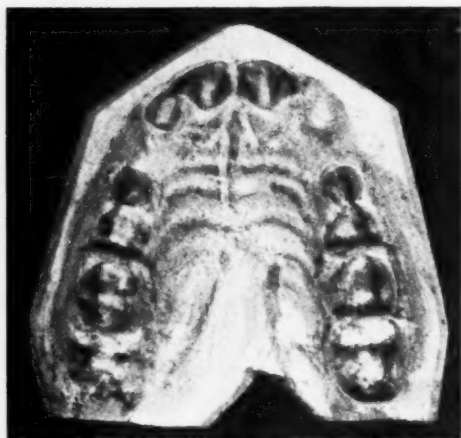


Fig. 1.

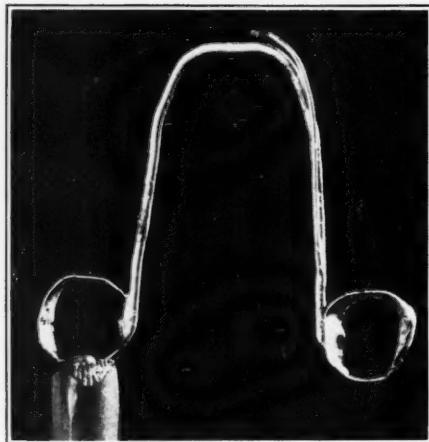


Fig. 2.

Fig. 4 shows an appliance that was adjusted to animal No. II. It is of the same type as that used on animal No. I. The compression of the auxiliary spring, $1\frac{1}{2}$ mm., to a position beneath the base wire exerted a force of $15\frac{1}{8}$ ounces as per the Irishometer. In this case the end of the auxiliary spring which came in contact with the incisor to be moved was bent at right angles to insure a more stable contact with the tooth, the free end of the wire pointing gingivally. The left first incisor was banded as in the first animal.

After forty days this animal was killed in the same manner as the first, and photographs made with the appliance in position. Sections were prepared in the same manner. (Fig. 5.)

Fig. 6 shows the field through the apical end of the labial section of the developing root of the twenty-six-day moved tooth of animal No. I. Note the curve at the end of the labial section of the root. The force from the auxiliary spring was exerted in a labial direction. The apical section of the root has moved lingually, leaving the tip, probably calcified in lesser degree, in its natural position. This deformation of the tip of the root is seen in the moved teeth of both animals.

Fig. 7 shows the apical end of the labial section of the root of the control of the first animal, i.e., the first left maxillary incisor. The tip of the developing labial plate of root is not deformed here.

Fig. 8 shows a section of labial plate, apical region of right first maxillary incisor of animal No. III, to which no appliance was adjusted. Compare with Fig. 7.

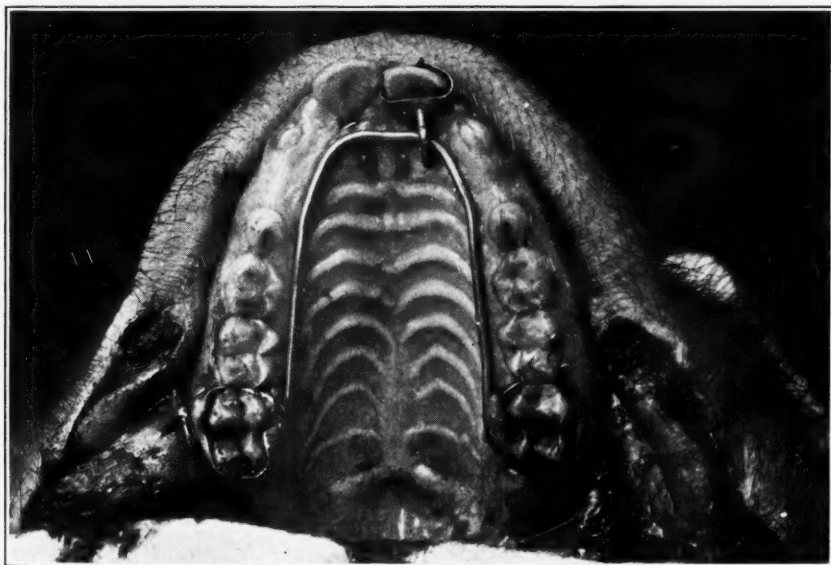


Fig. 3.

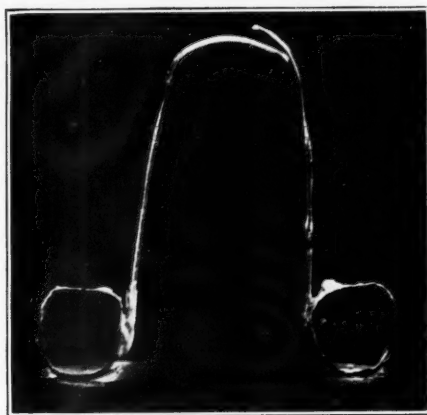


Fig. 4.

Fig. 9 shows labial section of the root and alveolar structures of the twenty-six-day experimental tooth, animal No. I. Note the nature of the alveolar bone. In the apical region the outline of the osseous structure is not distinct. Resorption has taken place. It presents an appearance similar to that described by Oppenheim (though the force was exerted in the opposite direction). The distribution of this tissue conforms to the line of force acting in this region. Toward the gingivus the bone is more definitely outlined.

Fig. 10. Twenty-six-day control. Animal No. I. Alveolar process massive and clearly defined throughout the labial section from the apical region to the gingivus. The amount, distribution and formation of the osseous tis-

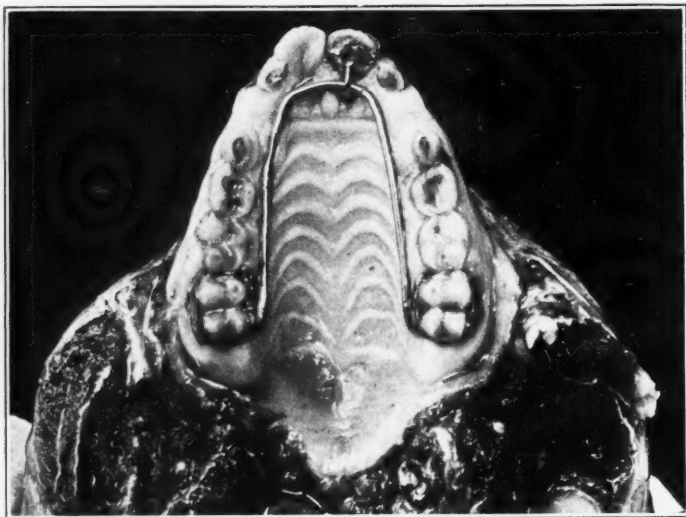


Fig. 5.

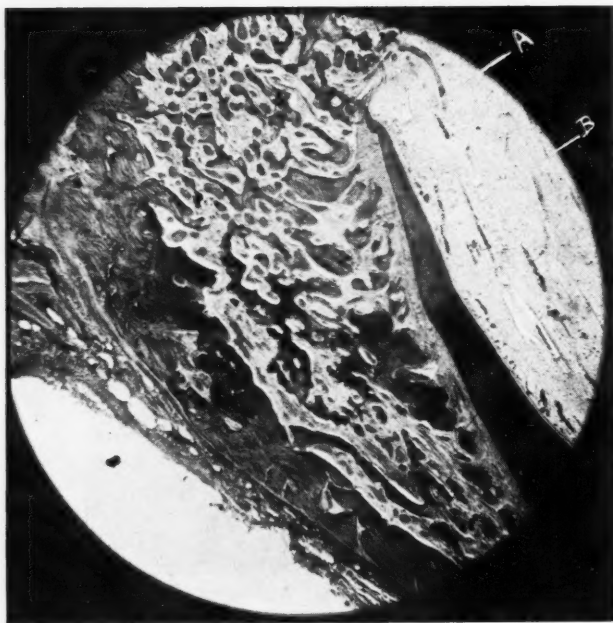


Fig. 6.

sue is markedly different from that seen in the labial region of the experimental tooth.

Fig. 11 shows labial section of the root and alveolar structures of the forty-day experimental tooth. Animal No. II. Note the deformation of the apex. The alveolar process shows changes quite like those seen in the twenty-six-day animal, i.e., resorption and conformity of trabeculae to the lines of

force. At the extreme right is seen the developing second incisor, *A*. The curve at the tip of the lingual plate is not entirely (possibly not at all) due to the movement of the tooth as there is a slight curve in the control.

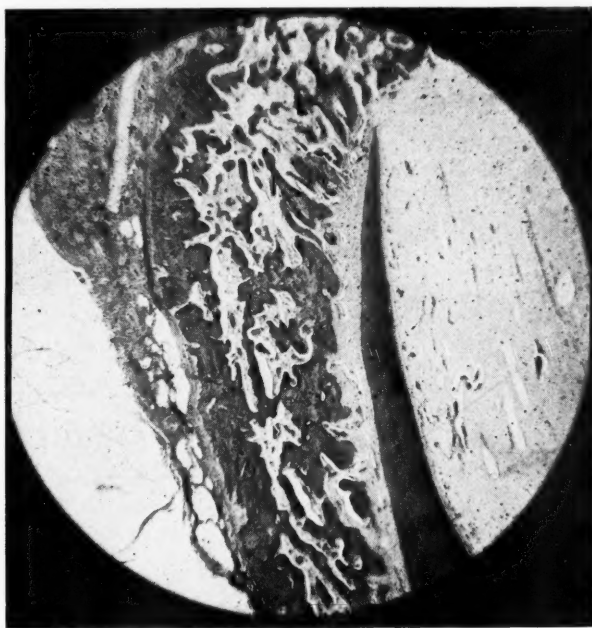


Fig. 7.



Fig. 8.

Fig. 12. Forty-day control. Animal No. II. Condition of alveolar bone presents a similar appearance to the twenty-six-day control.

There are twice as many osteoclasts along the edge of the alveolar bone

toward the labial side of the tooth in the forty-day specimen as there are in the same region of the control. On the palatal side of the forty-day experimental tooth there are no osteoclasts to be found. In the forty-day control



Fig. 9.

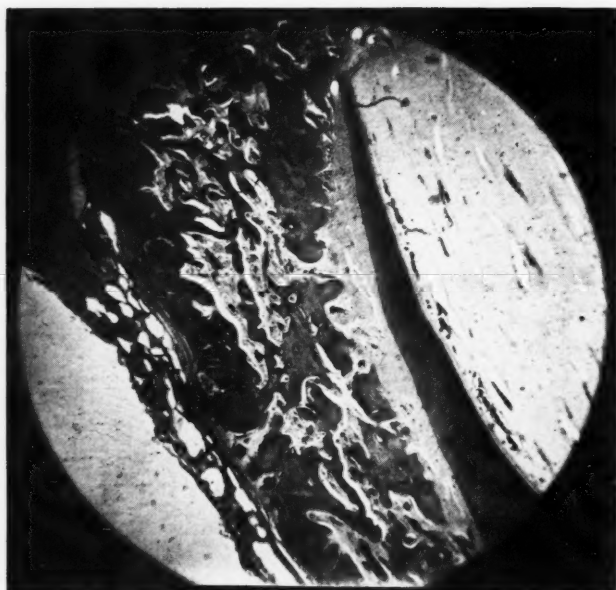


Fig. 10.

there are 26 osteoclasts labially to the tooth and 17 palatally. In both experimental and control teeth the osteoclasts are more numerous in the apical region.

Fig. 13 shows the apical end of the lingual section of the forty-day experimental tooth, *C*. The developing permanent tooth *A* is seen on the left

with areas of alveolar bone *B* between the two teeth. *D*, pulp of experimental tooth.

In the section of the root where deformation has taken place as a result of movement by the force of the appliance, is seen a resorption area. Al-

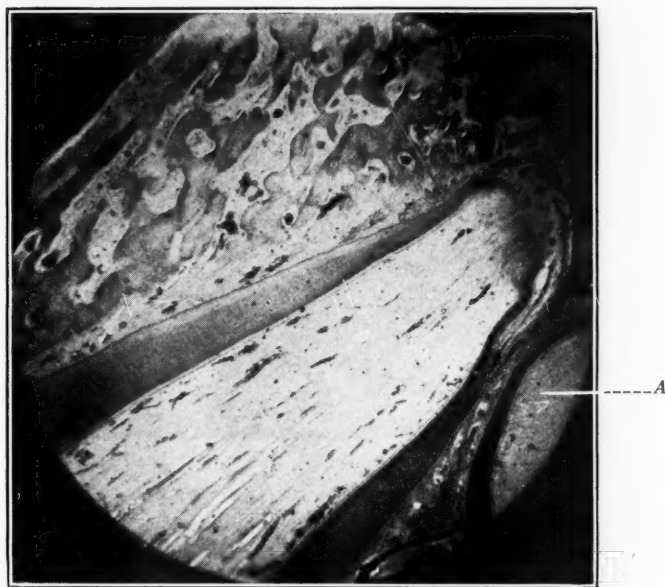


Fig. 11.



Fig. 12.

though no such condition is to be found in the control, the significance of its appearance here can only be determined by further experimentation. As before stated we are presenting to you the conditions as we have found them.

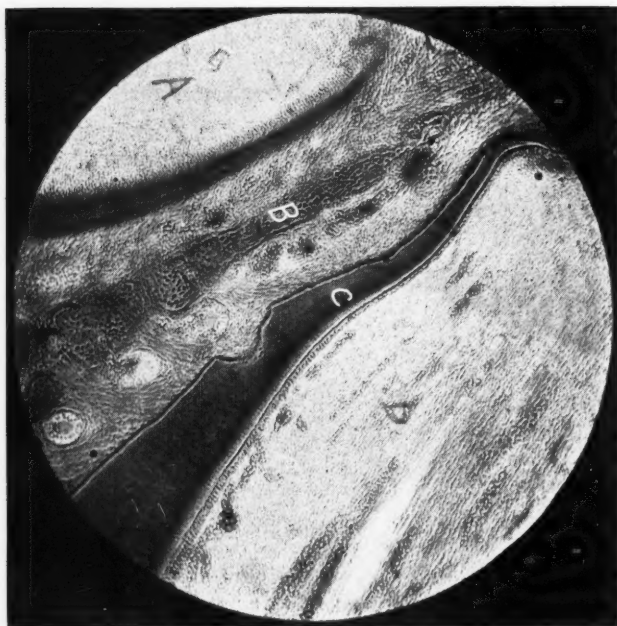


Fig. 13.

SUMMARY

I. There is a deformation at the apical end of the tooth that has been moved.

II. Changes in Alveolar Structure.

- a. Resorption of labial osseous tissue in the apical region as indicated by an indistinctness of definition between the alveolar bone and the alveolar periosteal membrane.
- b. The direction of trabecular structure conforms to the direction of tooth movement.
- c. Relative number of osteoclasts greater in labial side of apical region of experimental animal than in like region of the control.

III. Resorption area in the deformed section of the lingual apical region of the forty-day experimental tooth.

We are greatly indebted to Mr. B. B. Varian of the Medical School of the University of Pennsylvania for the assistance he has given us in the preparation of the histologic material in our investigation. His cooperation made this report possible.

DISCUSSION

Charles F. Bödecker.—The importance of the thorough comprehension of the biologic changes in the bone accompanying tooth movement can hardly be exaggerated and the work done by Johnson, Appleton and Rittershofer have added to the foundations laid down on this subject by Oppenheim.

Thirty years ago the rank and file of the dental profession cared little about what they somewhat derogatively called research work and it was difficult to hold an audience with an essay treating a purely theoretical subject. In the last twenty years, however, a welcome change has come over the profession, inasmuch as an increased consideration is given to scientific research. The literature, particularly of your specific journals on orthodontia, show an imposing number of excellent investigations of a purely scientific character and so

I believe that orthodontia has done more, and I say this with fullest conviction, has done more in contributing to our more thorough comprehension of the oral cavity than has any other specialty.

Many phases of research work, however, cannot be so readily linked with practical work as the investigations we have just had the pleasure of hearing. We knew that teeth could be moved, but previous to Oppenheim's work, we had no conception of the tissue changes caused by such a movement. The idea of Walkhoff that the elasticity of the bone explained this phenomenon has been finally and definitely disproved.

Our conception of bone, too, has undergone a radical change in the last decade. When I went to college we thought that bone once formed remained so for a lifetime, but now we know differently. Noyes describes this admirably in saying: "In all bone growth there is the alternation of formation, destruction and rebuilding and it must be remembered that this continues as long as the bone functions as an organ of support. The slightest change in stress brought to bear upon a bone soon causes a rearrangement of its structure, in order to adapt itself to the new conditions. We can, therefore, realize that soon after orthodontic appliances are put in place, the physiologic process of bone destruction and bone deposition takes place more rapidly, changing the form of the alveolus and thus allowing the tooth to assume a new position."

An interesting factor in connection with normal tooth movement is the variable thickness of the periodontal membrane—variable, not only in young and old patients, but variable also in the different teeth of the same individual. The thickness of the periodontal membrane naturally has a direct bearing upon the range of motion allowed each individual tooth; the thicker it is, the more movement is possible and vice versa.

The common conception of the periodontal membrane is that of a thick fibrous tissue which allows the tooth considerable motion. This is true in youth and also in young sheep's teeth so commonly used to teach histology to the dental students—but in adult life, the periodontal membrane becomes exceedingly thin, particularly so, when the teeth receive thorough use in mastication. It is, however, my conviction that a certain amount of individual movement is retained by all teeth, in opposition to the belief of some authors. The investigations of one of my postgraduate students, Dr. Appelbaum, seem to show a marked difference in thickness in the periodontal membranes of anterior and posterior teeth. This investigation will probably be of interest to the orthodontist.

The amount of pressure sufficient to move the tooth Dr. LeRoy Johnson mentions as being between one and two ounces. It is rather surprising to me that that should be sufficient, and the fact that he brought out that the apex moves in a contrary direction to that of the crown is different from that which Dr. Oppenheim states. Oppenheim stated that the tooth under the influence of the orthodontic appliance moves like a single-arm lever; that is, that the apex of the root acts as the fulcrum and the crown moves in this way (indicating with hands). If this were the apex (indicating) and this (indicating) the crown, the movement would be that way (indicating).

Dr. Johnson showed in his specimens that this was not the case, at least in his particular experiments, but that it acted like a two-armed lever and if this (indicating) were the crown, and this (indicating) the apex, the movement occurred like this (indicating). We would imagine, therefore, that the fulcrum is about in the middle of the root.

Why this should be so is difficult to say, but if we think of the matter logically, we would suppose that Oppenheim is correct, that it was a single-arm lever, and I believe the answer to the question is the degree of pressure used in moving a tooth because the bone is not any more resistant between the gingiva and upper third of the root than it would be lower down at the apex.

Concerning the osteoclasts mentioned also by Dr. Johnson, I just want to say one word and that is that the newer investigations do not make the osteoclasts absolutely responsible for the resorption of bone. They are undoubtedly instrumental, but whether it is in the manner we previously thought is doubtful. We considered that the osteoclasts secreted an acid which simply dissolved the tooth structure and even sometimes the dentine, and not only the hard structures, but also the fibrous structures of the periodontal membrane. We cannot duplicate in the laboratory the action of the osteoclasts. If we place the tooth in

acid or even subject one side, one localized side of it to the action of acid, the action is not the same as it is in the body. The acid attacks first of all the mineral matter and decalcifies the tooth, leaving the organic matter, and if we strengthen the acid, using also concentrated nitric acid, or strongest acid, the organic matter is disintegrated, but is disintegrated stage by stage; certain substances offer more resistance to the acid than others.

This is entirely different from the action of the osteoblasts. They form bay-shaped excavations, and the margins on the surface of the tooth are perfectly sharply defined. We come, therefore, to the conclusion that the action of the osteoclasts is something more than acid.

One other reason I might add that it cannot be acid, or purely acid, is that the permanent tooth following the deciduous one is often quite close to the root of the temporary tooth and, in fact, so close that the configuration of the crown of the permanent tooth is roughly duplicated in the root of the resorbing deciduous one. If the osteoclasts, therefore, depended on the presence of acid, this acid would undoubtedly do harm to the enamel of the following permanent tooth.

I mention these matters, not that they have such a practical application to you, but just to show the immense field there is still present for research work, how little we know of the subject of dental histology, and to stimulate all those who would be unselfish enough to sacrifice one day in the week and settle down to research work. The field is great and we have only scratched the surface, although our textbooks often appear to give the impression that we have solved all of these problems.

In conclusion, I wish to emphasize the fact brought out by the investigations of Johnson and Oppenheim that the orthodontist now realizes that the speed with which a tooth moves is an important factor in the success of the final result. Under the action of the orthodontic appliance, the periodontal membrane is compressed on the one side and distended on the other. If the initial pressure is so great as to produce a complete, localized stasis, we defeat our purpose, for bone resorption requires a certain amount of blood for the development and the functioning of the osteoclasts. This pressure must, therefore, be constant and not too great in order to facilitate the physiological process of bone resorption.

Dr. Eisenberg, Boston.—I was very much interested in Dr. Johnson's research work and particularly in the movement of teeth, and the effects on both the bone and the periodontal membrane. I feel sure that further study of his slides will reveal some very interesting changes in the periodontal membrane itself.

Of course, we all know the work of Oppenheim and also I have been informed that men like Greenberg, and one more in Austria whom I have forgotten, have done that work. The thing I want to ask Dr. Johnson and his collaborators to do is to examine the effect of tooth movement, elongation, depression, and rotation on the fibers of the periodontal membrane; compare them with the classic work of Dr. Box, of Toronto; see whether there is not a similar formation brought about as he has noted.

About three years ago when I wrote a paper in Toronto I had the privilege of examining Dr. Box' slides rather superficially, but I made interesting observations and I have been trying, whenever I had an opportunity, to get material to see if I could not find similar appearances. I would rather look very, very happily on an opportunity to examine some of Dr. Johnson's slides, if he would permit me, to see if I could find any similar changes.

It seems to me also that the time to examine some of these tissues would not be immediately after the appliances had been removed, but perhaps after a retaining brace had been put on for a number of weeks or months so as to see if there are any changes which nature has brought about to be more like a healing process.

Dr. A. LeRoy Johnson.—I want to thank Dr. Bödecker for his discussion. It was not possible for me to put the photomicrographs in his hands and he didn't have an opportunity to see them.

You must not confuse the work of Oppenheim with that which we did with regard to movement in the apical region. He worked on fully formed deciduous teeth; he didn't have the same opportunity to observe the conditions that we did. There is no contradiction there; the field is different.

Dr. Bödecker referred to osteoclasts. In the bend, the last one I showed, there were no osteoclasts that we could find.

THE PROBLEM OF FINAL RESULTS IN ADULT LIFE OF TREATED CASES*

BY DR. A. C. LOCKETT, LONDON, ENGLAND

THE primary object of this paper is simply an expression of opinion on this subject from a European member of the Congress on what he considers the best way of drawing attention, in the most forceful manner, to a state of affairs in the study and practice of orthodontics which, unfortunately, at the present time, is somewhat disquieting.

The problem of final results in adult life of treated cases is *the* problem of orthodontic practice. All other minor problems hinge or hover around this one, or are intimately associated with it. All existing underlying principles must stand or fall, sooner or later, in relation to this problem: all future principles must stand the test of the effect on permanent final results, if they are to be principles worthy of consideration: if they do not, they will be relegated to the scrap heap where other principles have gone and which at one time were considered to be a solution of this problem.

I am hoping that the members present will listen calmly, and not in the spirit of what I may call intense enthusiasm for the cause of occlusion, but in the considered interest of orthodontia as a whole, and, in doing so, I shall ask you to face the unpleasant problem of the lapsing of treated cases. My remarks must be in no way considered to be a criticism of other people's work performed in past years: the lapsing of cases into malocclusion is the unfortunate result of excellent work for which the operators of the past can hardly be held responsible, but the day is coming, and in fact has come when all operators must, in future, accept the responsibility for lapsing of cases: if we are not prepared to accept this responsibility, we shall have failed in our sphere of activity, and the practice of orthodontia must necessarily occupy a very humble position as a specialty or a branch of dentistry in comparison with other specialties. This aspect of the practice of orthodontia ought not to be looked at and passed over in the usual casual manner simply because it makes an unpleasant picture. I can think of no better way of drawing your attention to the unpleasant picture I refer to than by some personal experiences in the light of a comparison of other experiences in other branches of dentistry: the conduct of good and skillful operations in general practice usually results in some conditions verging on satisfactory and permanent results for a number of years at any rate: I need not enumerate them, they are well known: operations such as I refer to give adequate compensation to the patient, provided they are skillfully, mechanically and surgically well done, in much the same way as a skillful honest orthodontist corrects a case

*Read before the First International Orthodontic Congress, New York City, August 16-20, 1926.

of malocclusion, and makes the completed preliminary result a perfect piece of work. There is no question of any difference in the skill and honest intention of the general practitioner and the orthodontist. The character of the operations is entirely of a different type and class, but let us compare the results and the effect of these two results on two classes of operators, both skillful and endowed with all the ability and the qualities which go to make up a successful man.

The general practitioner knows on completion of a particular piece of his work that this or that case will enhance his reputation: recommendations come into his practice at once and continue to come as long as he fulfils the conditions of a successful dentist: the accumulated effect of a series of successes means recommendations: the accumulated effect of a large number of failures in general practice means that the practice does not grow or thrive.

The unfortunate orthodontist does his work of preliminary correction of malocclusion just as well as the successful general practitioner carries out his operations: recommendations come for the first three or four years (but they gradually wither away from that particular source): the unpleasant picture is this: if the accumulated effect of a large number of lapsed cases over a period of fifteen or twenty years could be condensed into two or three years, the immediate effect of these lapsed cases would be startling and disastrous, and men would sit up and take notice of this question quicker than is customary, and give more serious thought to it than has been done in the past.

Three years ago I decided I would take up this side of the subject and make investigations and enquiries in literature and experiments in practice, and try to find out from my own experiences and those of other practitioners:

1. To what real extent the ultimate final results of treated cases in adult life proved satisfactory and a credit to those engaged as being responsible for the work.

2. What were the reasons for a high percentage of failures and for some successes.

3. What could be done to put right what appeared to be wrong.

4. Whether we, as a sectional body of the dental profession, are to admit defeat after twenty-five years or

5. Whether we must go on as we are in more or less a state of chaos, every man going his own way or attached as a part of one School of Thought as against another and

6. Last, but most of important of all, if it is possible for us to drop our differences and get together, in a charitable spirit, regardless of what we may think of the other fellow's ideas, principles and methods with one object only, viz., to find a solution of this problem of orthodontic study and practice which can embrace all classes of practitioners, and if not, what may be considered a reasonable deviation from the best obtainable solution to meet conditions of practice among people who cannot be classed in one category.

I realise that this is no small problem, and that it cannot be solved at a Congress of this description embracing representatives from all over the world, but no better opportunity could exist for us European members, at

any rate, to place our problems and difficulties alongside the American problems, with the hope that by doing so we can make a few suggestions which I am sure will receive fair and just consideration by way of finding a solution of the final result problem. I cannot make a claim for any authority to present the European case: I can only do so as an individual who wishes to do so: other European members here may have more valuable suggestions and opinions to offer and their opportunity will come in discussion or in papers of their own. I am satisfied that the contents of this paper will to a large extent represent the views of a large body of men who are not here today, from Europe, for the simple reason that they cannot afford to be here, and, if they were, they would not feel themselves free to come forward, seeing that they have not had the opportunities of tuition that most of us present here have been fortunate enough to have had.

In referring to the European case hereafter in the paper my remarks are made as applied to the British Isles. It will be necessary (1) to go into a short history of orthodontic teaching and practice over the last twenty years as a preliminary to a presentation of the European case in relation to final results. A large proportion of the preparation for experience and the conduct of treating cases came from American colleges and special schools of instruction and a careful study of American textbooks and literature: some of it has to some extent developed, chiefly on the lines and teaching of these sources of instruction, and I believe we have found that there is something wrong somewhere. The history I refer to may be known to you over here in America and, briefly, it appears to the writer much in this manner: Dr. Angle's seventh edition of 1907, when it appeared, was meant to be an improved edition of the sixth edition and one step forward in the evolution of study and practice of orthodontia: most of us accepted that. The four editions of Dr. Dewey's book seemed to show some evidence of the necessity of certain safeguards and the reconsideration of problems and changed methods of treatment previously mentioned. These appeared to be brought forward as a solution of some of the apparent difficulties of those days which were responsible for a large number of treated cases lapsing again into cases of malocclusion, taking us up to the year 1919. (There are other steps in this short history which might be mentioned, but as they are mainly concerned with opinions of prominent men,—probably expressed privately,—they will not be mentioned and cannot be considered as evidence.) Dr. McCoy's book in 1923 or 1924 seemed to bring the subject of failures in adult life right out into the limelight. His definition of "Orthodontia" gives an entirely different idea of orthodontia from anything I had seen: I often wonder how long he took to make it complete, and how many times he wrote it and corrected it. I will read his definition: "Orthodontia is a study,"—he does not say "a science,"—"of growth and development: it *seeks to determine* the factors which aid in bringing about the normal development of the dental arches and the functional perfection of the teeth and their correlated parts, and *aims* to learn the influences necessary to maintain these conditions when once they have been established." Alongside this definition I will mention Dr. Angle's: "Orthodontia is that science which has for its object the correction of mal-

occlusion." On page 1 of the seventh edition just above this definition there is a quotation from Hudson, which says that it is impossible to make substantial progress in any science in the absence of a working hypothesis which is universal in its application to the phenomena pertaining to the subject matter: the working hypothesis enables one who is skilled in that science to practise it with the *certainty* of results in exact proportion to his knowledge of its principles and his skill in applying them to the work in hand. Dr. Angle's definition and the quotation have proved correct in matters of correcting malocclusion as a preliminary procedure: it has been done and is being skillfully performed to-day by hundreds of men. The main initial differences of these two definitions may be summed up in this way: Dr. Angle's definition did not provide for a hereafter, for the simple reason that he never thought it necessary, and Dr. Mc.Coy knows there is a hereafter to a corrected malocclusion, and reckons that the hereafter is unknown as to its duration. We have here the crux of the orthodontic problem I am presenting to you: I am not making any complaint or unfriendly criticism of these definitions. They are the best I have seen in the light of experiences of the practising days when they were written, yet one offers certainty and the other does not. I am hoping that if Dr. Angle cannot be present, some member of this Congress can throw some light on the present conception of orthodontia as taught in the new Angle School, and how he proposes to apply that conception to guaranteed permanent results in adult life.

If we really study Dr. Mc.Coy's definition in conjunction with other pages of his valuable book, it cannot but bring every practicing member of the orthodontic profession to one of two conclusions:

(a) I must accept it as true and make up my mind whether I can live up to it in my practicing career or

(b) I must disbelieve it and work out my own salvation as best I can to meet the needs of my practice if I am to lead a life of peace.

2. The second preliminary to the presentation of the European case I want to refer to is an expression of opinion of some of the causes which are responsible for the present uncertainty of an orthodontist's daily life:

(a) Too much importance and time have been given and devoted to appliances and methods of procedure at the expense of sound and careful consideration of underlying principles. There is plenty of evidence in the literature of today that this side of the subject is receiving consideration and thought where it ought to have come firstly and not secondly. The matter of technic and appliances, and materials for appliances has reached such a high state of efficiency as to make it possible for the next ten years for each man to devote all his spare time of study to the mastering of the principles which are responsible for his successes.

(b) Reports of failures will do more for orthodontia than reports of successes: they need no care or thought expended on them other than comparison of the failure causes.

(c) Members of the profession will help orthodontia best by congress exposure of ultimate results in adult life of what they considered successes in earlier life.

(d) The interesting question of types of people of the same race, and the comparison of different types of the same and other races and the comparison of different races has apparently been forgotten where treatment of cases is considered or taught, and particularly so with reference to the forces which govern normal occlusion in relation to the tendency to react against these same unfunctional forces after treatment. These forces of occlusion are more difficult to harness and bring under control in some types than in others. I believe there are many cases of irregularity with conditions of one sort and another associated with them where it is impossible to bring about correlation of normal function of all the parts which go to make up the complete facial and dental mechanism as a united normal. We have no means of knowing just when forces governing occlusion are really acting normally: it is to a large extent guesswork: if these forces play the part in maintaining a treated case in normal occlusion that the textbooks tell us they do, then it is obvious that unless we do know when normal action and abnormal action is taking place, we are not one iota further advanced in the experience of controlling these forces than we were before they were discovered or suggested.

(e) Textbooks and orthodontic literature give the impression that there is not an abundant amount of evidence to prove that we sufficiently differentiate or appreciate in our calculations as to causes, diagnosis and treatment, that the superior maxilla and mandible constitute the *bases* of the alveolar attachments which come with the temporary dentition and disappear when it has served its purpose: we all know they are, but the foundations themselves are not considered to the extent they ought to be. A simple illustration will throw some light on this point: there is abundant evidence for the generally accepted theory and teaching that the presence of all the temporary teeth in health and normal dimensions is necessary if we are to prevent the moving forward of teeth posterior to the partial or complete loss of temporary teeth: this theory and teaching is correct in cases where irregularities are already in existence, or are about to exist, and where the foundations are abnormally developed or are developing: the amount of forward movement is dependent on the degree of the existing irregularity or the tendency to an irregularity and also the abnormal jaw development. The theory is not correct, however, in cases where the development of the foundations is normal and continues to be normal.

(f) Orthodontic societies should encourage the association of general practitioners interested and experienced in orthodontia and bring them into their councils of deliberation and investigation more than has been done previously.

(g) The experience of many of us in England with the treatment of our national type of individual as compared with other nationalities has driven most of us to the conclusion that the chief local cause of disturbance and the breaking up of achieved normal occlusion is the process of eruption of the second and third molars of both jaws, and particularly the upper jaw: it is so powerful a factor that one is tempted to call this process a force of eruption. I can see the reasonable possibility of associating this condition with

the abnormal action of one or more of the well-known forces of occlusion, but I believe that this force will act regardless of any of the forces of occlusion and wreck treated cases one after the other,—with great rapidity in the types of people we attend in England, and with varying degrees of time among other nationalities and types which are different from our own in the proportion as they show a tendency to break away from their original types due possibly to inter-marrying of different types. Other European members may be able to make some reference to this experience.

(h) Perhaps the strongest reason for lapsing of treated cases may be found in the idea or theory that some of what have been considered as underlying principles for treatment have been found after many years of experience to be simply the working out of a principle of an appliance, and in reality have nothing in common with orthodontic physiologic principles. We cannot produce physiologic occlusion through the agency of mechanical principles only: we believe and repeatedly assert that the practice of orthodontia is something more than mechanics, but what evidence can we produce to prove in terms of permanent results that our repeated assertions are based on anything but sentiment and a wish that the assertion should be true.

(i) Another very strong reason will be found in the belief that with the exception of a few cases of brilliant and exceptionally skillful men and students, the best interests of a solution of lapsing of treated cases will be served by specialization after several years of experience in general practice.

THE EUROPEAN CASE AS APPLIED CHIEFLY TO THE BRITISH ISLES

I will endeavor to apply the teaching of your well-known and highly respected writers of textbooks as I interpret them, and refer to expressed opinions of other prominent members of the orthodontic profession to English conditions and experience in order to show you how these writings and opinions work out and they may be classified as follows:

I will refer chiefly to:

1. Dr. Angle's views and opinions.
2. Dr. Dewey's views and opinions.
3. Dr. McCoy's views and opinions.
4. Dr. Mershon's views and opinions.
5. Dr. Potter's article in the March number of the *International Journal of Orthodontia*, 1925.
6. Dr. Stanton's work on predetermination of the arches.

I do not know that this classification embraces all the schools of thought, but it will suffice, and I trust I may be forgiven for any omission: there are probably points on which some of these gentlemen agree, yet there are evidences of marked differences of opinion on others.

Dr. Angle's Views.—Last year in London, acting in the capacity of Hon. Secretary to the European Orthodontological Society I was offered a paper from the Angle School of Orthodontia at the Annual Meeting in May. I do not know just what part Dr. Angle takes in the school of today, or to what extent this paper represented his present opinions and views as compared with the seventh edition of his book in the application of its teaching to

English conditions. We were shown slides of models with appliances in position, and the essayist explained the action of these appliances—slides of models of cases before and after which were completed in periods of time varying from four to nine months, all of them very excellent corrections of malocclusion—slides were also shown of the retainers which were to be responsible for a final result of a treated case in after life, but there were no reports of cases to prove that this assertion had been proved: we in Europe feel that the value of a method must be measured on final results and not by quarter way results. We are ready to welcome a representative of any school of thought and teaching from any country at the meetings of any orthodontic society in Europe who can prove to us by slides of models of treated cases in normal occlusion after the age of twenty-five years, and particularly so if the period of treatment is short by means of appliances which sooner or later will not wreck and destroy the teeth and leave the soft tissues in a state of incipient or well-developed pyorrhea. Most of us, in all the European countries, do not place any faith whatever in reports of cases before and after: the days before and after, of just what has been accomplished up to the retaining period, as evidence of the worth and value of method and principle have gone forever. I shall ask the other gentlemen who have been mentioned in the list to be generous with me in the presentation of the European case. I will ask all shades of opinion mentioned or unmentioned to please come down from the skies to earth for a few minutes and listen to the European case. There is one marked difference in the orthodontic possibilities of the British Isles and those of America. In America you have produced a classification of orthodontia, and you have, so far, apparently with some success, fitted in your population to that classification. In Europe, the writer feels, this is not possible: we must classify our population and try to fit our orthodontic classification into the classification of the population. The classification of the population is as follows: The population of the British Isles is roughly about 45 millions. We will consider 10 per cent of this population which will represent the proportion which pays income and super tax in the following proportions:

A. About 100,000 payers of both income and super tax, i.e., with incomes of £2,000 and upwards.

B. About $2\frac{1}{2}$ million persons with incomes of \$1250.00 up to just under \$10,000.

C. About $2\frac{1}{2}$ millions hovering so closely on the \$1250.00 annual earnings as to be exempt from income tax, and for purposes of consideration we will include them in our list.

D. The remaining 90 per cent of the population of the British Isles cannot be dealt with in this paper: you must leave that to us, but you can gauge our future possibilities of solving the problem of taking care of the proportion of children of this gross 90 per cent population by the success of our finding a working basis with the members of this Congress at some future time on the children of the first 10 per cent which we will now consider. I think it is possible to consider the children of Class A of the population in accordance with the teachings and views of Dr. Dewey, Dr. McCoy and Dr. Mershon,

Dr. Stanton, and, to make the presentation case simple, do please say you do agree on matters of general principle. I can see some possibility of going part of the way with these gentlemen's views, if they can tell us that there is some reasonable hope in the near future of obtaining results which we feel will respond to the cold and acid test of what constitutes a success in later life: the lack of opportunity and other local conditions would probably wipe out a large number of these cases, but there would be a fair number left.

Class B applies to the children of $2\frac{1}{2}$ millions of people who could not, for financial reasons take on a responsibility such as would be necessary to enable an orthodontist to assume his responsibility to the parents of these children in accordance with the views, beliefs and teaching of these gentlemen as I understand them, viz., Doctors Mershon, Dewey and McCoy and Dr. Stanton.

I am stuck here, for I know no more of Dr. Potter's views than have been expressed in his article in the March, 1925, number of the *International Journal of Orthodontia*. I know perfectly well, from observation and experience, that the teachings of all the American textbooks cannot as a general rule be carried out in this Class. Is there anybody in this Congress, tutor or specialist, who would be prepared to carry out the mechanical side of treatment of cases of this Class B to the stage of normal occlusion, and to the point where the teeth in occlusion, dental arches, jaws and their correlated structures are restored to the relationship which will make possible their normal use in the varied functions which they are supposed to perform? Will anyone here undertake to do all I have just mentioned in a practice where his average fee would not be more than 150 dollars or £30? When he has done all these things, is he prepared to go still further and carry out post-requisite treatment to make the developmental and altered conditions adaptive to the physiologic and functional requirements of the human mechanism as a whole for "nix"? Furthermore, is there any one here who can tell us, from Europe, when he knows for certain that these various steps in the handling of a case have been performed, and, if so, what is the proof, even in cases where the fee is of no consideration and means are more or less unlimited? Unless some one can tell us, we can only believe that all that is written and taught of forces of occlusion is just so much beating of the air.

Dr. Potter makes a classification of types of all cases of irregularities, and as he uses the word "type" I am interested and I will ask him to tell the representatives of Europe at this Congress how his views would apply to children of this portion of the British Isles' population, remembering that

1. The average remuneration this Class could offer per child would range from £30 or 150 dollars.
2. The average amount of time for all purposes to ensure a success would be three years, and you will be lucky if you get more than two years.
3. The handicaps of work under which these cases would be treated are ten times greater than those here in America.

Class C. My remarks in reference to Dr. Potter and those who are ready to agree with him on treatment of Class B will apply in the same way to Class C, but with greater emphasis. This Class,—the future hopes of the

Chancellor of the Exchequer,—are parents or relatives whose incomes are exactly 1,250 dollars or £250 per year: out of this figure they must live, clothe and educate themselves and their children. I question very much whether Dr. Potter would care to consider this class. If there are any other gentlemen here present who can tell us members from the British Isles how they would and could provide for these families, we shall be delighted to hear from them. I hope I have not wearied you with these statistics of reference to incomes: I could have elaborated at great length on other difficulties which would make the consideration of the income statistic problem even greater than it is. I feel sure we have your sympathy and good will in our problems: the solution of all of them, to my mind, cannot be accomplished without considering our necessities. To make anything like a success of orthodontic work in the British Isles which will enable an operator to face the parents of his children in years to come (as he would in the case of general work) with a feeling of confidence and success at having pleased them, and not be faced with repeated visions of his good work having gone to pieces, and be haunted with the fear that, sooner or later, this or that case will be an addition to a list of failures, certain conditions have got to be complied with:

1. The general average time which a parent will give to this work is three years: he or she wants to be done with it for good after that time.

2. The work and methods have got to be of such a plan and character as will fit in with the requirements of the public schools.

3. The results must be of a permanent character, whether the work is carried out on normal occlusion basis or by extraction.

4. The whole subject must be simplified in principle, even beyond the point of attainment of simplicity of appliances which you over here have carried to such a fine point. I have tried to place before you in the nicest possible way what many of us in Europe think on the unpleasant fact of lapsing of treated cases. I feel sure there are many men in America who think and feel as we do about the problem of what constitutes a successful result of a treated case in adult life. We are all anxious to work in conjunction with you gentlemen in America for a solution.

I have also put before you the lamentable conditions of the possibilities and requirements of orthodontic practices in England: to gauge what those possibilities are in other European countries as compared with those of the British Isles is no easier than it is to find a solution for the British Isles. I refuse to believe that a solution cannot be found, and we hope to find it through your help and our own efforts. We are all indebted in no small degree to a great many of your prominent orthodontists for their generous and valuable help at our meetings in Europe, and for their contributions in literature. We are counting on your continued assistance, support, and co-operation, and we believe that a charitable and sympathetic appreciation of our conditions and requirements will tend greatly to facilitate the object I had in my mind in writing this paper for this Congress.

Having stated the European case with reference to lapsed cases, I should like to say that I very much regret that it is impossible to offer in this paper

any constructive suggestions which might be of some value; this side of the problem ought to be dealt with in a separate paper.

My remarks have been, unfortunately, of a critical character, but they are in no means to be construed in any other light than that of being friendly, and are meant to be a preparation of the ground for future suggestions. I will embrace this opportunity of stating that a plan of operations for next year is under consideration, whereby we hope to arrange for a large meeting to be held in London which, I hope, will be supported by the E.O.S., the B.S.S.O., the French Orthodontic Society, and other Continental Orthodontic Societies, and by any other dental societies or associations which may feel disposed to support the scheme. It is hoped that at this meeting we shall see a large number of you gentlemen present at this Congress: you are all invited and you will all be welcomed. At this meeting I think I may safely say that there will be two papers from European practitioners which will deal with the subject of lapsed cases on constructive lines. I hope I may be fortunate in obtaining two papers from our American friends. We ought to have a very valuable contribution all round as our mutual effort in trying to find solutions of what I feel is the weak point about the practice of orthodontia.

Let us all make a big effort to rid this interesting branch of our profession from the element of uncertainty which has for years and is today spoiling our interest in our work: let us meet together in London in this spirit, and I prophesy that a great step up the ladder will be the result and one which we shall never regret.

DISCUSSION

Dr. E. D. Barrows, London, England.—The paper to which we have just listened raises the questions which are of interest to us all. I must confess that if we all saw the picture in the same light as the essayist, it would have a most depressing effect on us orthodontists.

I think we can all agree with Dr. Lockett, that there are cases that relapse, notwithstanding careful treatment and long retention, but why should these cases condemn the whole practice of orthodontia? It would be just as absurd for an orthodontist to give up the treatment of cases of malocclusion, for the reason of lapsed cases, as it would be for a physician to give up treating patients with pneumonia or a surgeon to refuse to operate on patients with appendicitis, for the reason that a certain percentage of the patients died. Further, to make a medical man responsible for these lives, would be a new departure but not an advancement in the public interest. This rather novel idea that the orthodontist must take the responsibility of completed cases up to the age of twenty-five years, that is for a period of ten to twenty years, after the cases have been completed is not practical or possible. You can hold switchmen on railways responsible for proper lights and signals to insure the safe running of trains—in fact many other professions can give similar guarantees or take over responsibilities, but why an orthodontist should be expected to assume responsibilities for forces which up to now have not been discovered or measured, is beyond my reasoning.

I wish the essayist had given us some statistics regarding the cases treated and appliances used, etc., in his practice and perhaps we could have thrown some light on the subject.

In passing, Dr. Lockett said, "The matter of technic, appliances and materials have reached such a high state of efficiency that it will require the average man all his spare time for the next ten years to master the principle involved for his success." I think Dr. Dewey's school is able to give this instruction in six months.

I am sure we shall find a smaller percentage of lapsed cases among the patients treated during the last ten years than any time previous for the reason that orthodontic treatment is now begun at a much earlier age and the appliances at our disposal are much more efficient.

The European problem pointed out by the essayist is no more European than American. At the present time there are not enough orthodontists to care for the teeth of the people who can afford to pay for the treatment. The 90 per cent who cannot afford to pay will probably never receive any orthodontic attention except in isolated cases which will have to be paid for by the state or charitable institutions. To my mind, the future of orthodontia never looked brighter than at the present time in spite of these lapsed cases and it is only by our failures that we rise to greater heights.

Heaven is not gained by a single bound but we build the ladder by which we rise from the lowly earth to the vaulted skies and we mount to the summit rung by rung.

Dr. J. Lowe Young.—It has been my good fortune to have had for several days a copy of the splendid paper to which you have just listened, and I wish to congratulate the essayist on his frank manner of expressing his views.

In the first paragraph of page 4 the essayist states that three years ago he decided to take up the subject of final results of treated cases and make investigations and inquiries in literature and experiment in practice, and try to find out from his own experiences and from those of other practitioners the solution to the six propositions enumerated in his paper. But unfortunately we do not find that he has given any solution, or suggestion for solution, to the problems referred to.

It is not clear to me just what he means in the last clause of his sixth proposition which reads as follows: "That may be considered a reasonable deviation from the best obtainable solution to meet conditions of practice among people who cannot be classed in one category."

It should be apparent to every one that so long as we cannot definitely determine the cause, or causes, responsible for a malocclusion, we are certain to have trouble with cases relapsing if treated prior to the eruption of all the permanent teeth and the complete development of the individual. For this reason the definition of orthodontia given by Dr. James D. McCoy and quoted by the essayist should ever be our guide in the treatment of cases.

One of the most important phases in the practice of orthodontics is the proper diagnosis and the certain detection of all factors that enter into the causes of the malocclusion in hand. This, unfortunately, is often neglected.

On page 17 the essayist states as follows: "2. The average amount of time for all purposes to insure success would be three years and you will be lucky if you get more than two years." This seems to me to be the great trouble the essayist encounters in his practice. When a professional man permits his clients to dictate to him the type of operation, or method of treatment, or time consumed in treatment, he is certain to meet with disappointments. This applies to every branch of professional life as well as to orthodontia, and the sooner the orthodontist realizes this, the better it will be for the specialty. To date the practice of orthodontics has not reached that stage of simple treatment which makes it available for the masses. What the future has in store, no one can tell.

To offer a constructive method of treating cases on a time limit of three years, I would suggest that cases be not treated at all until all the permanent teeth, except the third molars, are erupted; that full set of dental radiograms should be procured before treatment, and that if the third molars are malposed they should be removed before beginning treatment. Next a thorough study made of the malocclusion and of the general development of the individual. Then if thought advisable correct the malocclusion, say within a year—and most cases can be successfully treated in that time, and then retain the case for two years more.

Now please do not understand that I am advocating this as the best procedure for the treatment of the cases of malocclusion, for I am firmly convinced that the best service an orthodontist can render is to be through with the treatment of the case by the time all permanent teeth, except the third molars, are fully erupted.

Dr. Lockett.—I should like to make it perfectly clear, ladies and gentlemen, that in approaching this subject in the manner in which I have done, I have simply done so, as I stated in my paper, with the object of concentrating one's mind on a certain definite problem and at the same time bringing it before you to see what actual support we in Europe could obtain from you on any problems which might arise which might enable us to find a solution to what we consider necessary for the people in Continental Europe and in England.

It is not meant to be a criticism of what may be the general custom and attitude of mind of the profession here in the treatment and handling of cases.

Dr. Barrows states that he thinks there is a greater future for orthodontia now than in the past and I quite agree with him. I feel if it were possible for us, not necessarily here, but if as a result of it in years to come, through expressions of opinion of other people or of other gentlemen who may be interested in the subject, that they can offer any solutions that will help us in England, we shall be very pleased to have it.

Dr. Barrows has said, I think, that it is not practical for an orthodontist to accept responsibility for the treatment of cases. I think the general feeling in England, among our patients at any rate, is that they would rather not have any work done unless we are prepared to accept some responsibility in the matter, and that may agree with your attitude of mind here, but I am not expressing any opinion on it at all, but as he mentioned it, I feel sure in the course of years he will find it will be necessary for him to accept some responsibility in the treatment of lapsed cases.

I will explain to *Dr. Young* what I mean by reasonable deviation. I am hoping as a result of my putting this forward that on further consideration we may find some of you gentlemen here ready to cooperate with us to handle what is a serious and vital problem to us. It may not interest you. It may not, but it is of truly national importance that it be handled with a different attitude from yours. Whatever the solution may be that is arrived at, that may be considered more or less on the basis or level for the handling of 10 per cent, or one-tenth, of the population perhaps that I refer to, if it is absolutely necessary that we in the course of the methods and principles that we may adopt in the treatment of cases, either by extraction or anything else, that is what I refer to as a reasonable deviation.

I think I have touched on the points raised by these gentlemen and I would like to take this opportunity of thanking you for the liberty I have taken and also for the earnestness to which you have listened to a matter which is really not your affair at all. I have taken the liberty of bringing it before you because I think in an International Orthodontic Congress we should appreciate the conditions under which we live in different places, and put our problems before each other in perhaps the way I have done it.

I am certain that if, in the course of time, you should visit and stay amongst us in Europe, you would realize that there is a great deal more behind what I have written than perhaps you now think. I am not doing it from what may be considered the lucky man's standpoint on the scale of prosperity and of success, but I am looking at this thing in the light of the requirements of the man who is not here, the unfortunate chap who has got to do the work for a small fee and do something for his patients, and he feels and knows that he is taking the work on with a certain amount of responsibility and has never looked at it in any other light.

We don't care what the solutions may be that will perhaps help us, and in a sense I am fighting the battle of the men who are not here, and doing all I can for the children of the parents of England who are today going through a severe strain in more ways than one. I thank you, gentlemen.

President Fisher.—*Dr. Lockett*, you were perfectly right in bringing your problems to this Congress. You are perfectly correct in the statement you make that an International Orthodontic Congress is the place to bring the orthodontic problems of your individual countries. Do not be discouraged, if you are discouraged, at this moment that your paper did not bring forth voluminous discussion or that you have not a great number of suggestions to take back to your country. The mere printing of your communication, the publishing of it in the printed proceedings, may bear greater fruit than you could possibly anticipate. I trust so, at least. (Applause.)

Dr. Lockett.—Thank you.

THE TWENTIETH CENTURY FACE

BY DR. B. L. HYAMS, MONTREAL, CANADA

THE individual assumes much the same type of visage as its ancestors. This fact is apparent from a study of the development of the human face. As a result of race mixture, any combination of the characteristics of either may be found.

A perusal of the illustrations found in books on Asia, Africa and South America, reveals a striking similarity in faces of the natives regardless of race intermarriage.

Expert observers report that in infancy, not more than one face in five thousand possesses features of sufficient variation from the regular type to warrant distinction. Yet a glance at a photograph of a group of adult inhabitants of our highly civilized nations, even a group of the large family kind, reveals types of faces with a variety of form running the limits from Venus and Adonis, to the caricature types of Andy Gump and Mr. Lardner's "You-know-me-Al."

These findings suggest causes for the disharmonies that may be found by an investigation of the common habits of life to which the individual is accustomed from infancy to maturity. This essay presents an explanation of the great number of facial disharmonies evident today to the most casual observer.

At birth, the infant possesses in a rudimentary state, upper and lower jaws, in which are embedded the deciduous teeth and the germs of the permanent teeth; muscles of mastication and of emotional and vocal expression; the nose and nasopharynx, and the eyes. Except for the eyes, these organs are in a state of primitive development. The palate is of sufficient size to accommodate the baby arch on its arrival.

During the following six months, nourishment is taken in the form of liquids. Little effort is required from the individual for its acceptance at this period. About the sixth month after birth, the teeth commence to make an appearance. This is in conformity with the need for food in a more substantial and varied form in order to meet the demands of the rapidly growing individual. Note that the teeth put in an appearance singly. Nature's plan seems to be, to give the individual the chance to master the use of each tool before the next one comes on the scene. Thus the child almost involuntarily acquires a specialized knowledge of the use of the dental apparatus, and is enabled to make the most efficient use of the machine placed at his disposal.

By the age of three years, the deciduous set is complete, together with the ability to use it. These may be considered as nature's contribution to the make-up of the growing individual. Rarely does she fail in these particulars.

At this period attention may be called to the marked similarity in the features of all children.

So great a difference exists in the size of the head at birth, and at maturity, that two different sets of teeth, the deciduous dentition and the permanent, are supplied, to bridge the gap.

A fixed time table is followed as regards the shedding of the baby dentition and the succession of the permanent. The permanent dentition is of considerably larger dimensions. To accommodate it, the entire bony framework must be enlarged, and this to schedule, as the teeth will appear precisely on time, regardless of their accommodation. To accomplish this great increase in the dimensions of the parts, a complex process is involved. Included in this activity, are the bones of the cranium (coronal ring) and the bones of the internal and external face. This growth is successfully achieved under the control of a very subtle coordinating influence called the internal secretory system. Its purpose is to maintain harmony in the relationship of the growing parts during the process. The pituitary and thyroid bodies are of prime importance in this connection. Of equal importance in the process of development, is a constant stimulation to the cells set up by the constant and vigorous use of the muscles which have their attachment to the bony framework of the face. The muscle systems responsible for this stimulating influence are the masticating group, the muscles of expression both emotional and vocal, and those of the breathing outlets. The fact is becoming apparent that the face is essentially a bony framework supporting the teeth and associated muscles.

Any influence that interferes with the normal symmetrical action of any of the previously mentioned muscle systems, will in turn exert a corresponding influence on the formation of the bony framework, and of course on the face itself.

So far nature has had the mastery over the process of facial composition. This is the first step in the process which looks to cooperation on the part of the individual. Nature is now requiring of the individual a certain measure of effort for the bestowal of her gifts. This marks the termination of the great hereditary period of development and the inception of an environmental influence that makes itself felt as long as the vital functions persist.

It is strongly apparent that there is much likelihood of disturbances arising from the somewhat constant order of eruption of the permanent teeth, on the one hand, and the many sources of interference to the needed development of the bony framework, depending as it does on perfect health, for control of the growth mechanism, and the perfect cooperation as to use of the parts by the individual, on the other.

Normally, the required forwards, sideways, and vertical growth of the parts, is synchronized to coincide with the eruption of each pair of the newly erupting teeth. Accordingly, a very marked lateral growth is noted at five and one-half years to accommodate the much larger first incisors and a forward protrusion of the whole arch in relation to the cheek bones to accommodate the first permanent molars. Following the arrival of these

teeth, a steady increase in the vertical space between the jaws takes place, to house properly the longer crowns of the permanent teeth.

A further extension of the arches ensues at eleven to accommodate the large canines and second molars due at twelve. Another and final forward protrusion is slated for fifteen to allow room for the third molar when it appears. It follows from all this active growth about the teeth at an early age when the rest of the face is far from its mature form that the teeth will present an appearance of undue prominence.

As a matter of fact this awkward appearance is found to exist in those cases in which the bony development has kept pace with the program outlined for the entire face. It also appears at the same age in boys whose bones are planned for a full grown stature of five feet ten inches and a weight of 170, at maturity. There may be an interference with any or all of the periods of growth activity outlined.

Great hygienic significance is attached to the presentation of the sources of such interference with the normal plan of development. First in importance is the disturbance to the growth process brought about by the diseases of childhood. This involves the entire body, and it is well-nigh impossible to replace the masterly control lost by the internal secretory system during the interval of disease. Because many years may elapse before the results of such a disturbance become prominent, the cause is often obscured.

THE FUNCTION OF THE TEETH

In order to proceed further in regard to the causes of improper development of the face, it is necessary that the use of the organs which compose it be made clear. The masticating apparatus is the seat of next great importance as a cause of disturbance.

Considerable difference exists in the forms of the various teeth. This is due to the diverse purposes that they are required to serve. All sorts of physical forms are included in the human diet, and it is the purpose of the teeth to render them all to the consistency of a thin paste. This is the form that is most acceptable to the stomach for further treatment.

The teeth are arranged about the mouth to conveniently and efficiently grip an article, bite off a morsel, crack any sizable particles of a brittle nature, and grind the residue to a pulpy consistency, assisted at this stage by the salivary glands that supply the fluid needed in the process.

This process is a complex operation comprised of the four stages mentioned. The teeth are found to present four varieties to correspond with these purposes. Each of these groups are situated, as regards convenience and efficient mechanical operation, in the region best suited for their use. Thus the canines are set at the corners of the mouth. They serve to seize and hold an article in the first act of mastication. Their form is well suited to the part they are called on to fill. Eight cutting teeth or incisors are set at the very front of the mouth. They are arranged to form a shears, and serve to cut off a morsel of the article as previously stated. In form they are shaped to a blunt cutting edge or blade. Well in line with the great muscles of mastication at the sides of the face, are the premolars. They are small two-

pointed teeth that serve to crush and crack hard particles of food. The points are found to be arranged in the same manner as the crushers used in a commercial stone crushing mill. Placed well back in the mouth, in line with most efficient action of the great muscles of mastication are the twelve molars or grinders. Their morsal surfaces are broad and roughened accurately, to cope with the purpose they serve.

In the performance of their function, the teeth make countless excursions, for this purpose bringing into play the muscles of the face. Continuous stimulation of just such a nature influences development to the greatest extent. It is to be perceived that the slightest variation in the paths of movement of these muscles, due either to habit or some defect or oddity in the make-up of the organism, will lend to the development of the face an influence of its own. Thus a strange excursion, set up in the muscle paths, will result in a corresponding deviation in the form of the face, somewhat different from the normal.

RELATIONS OF THE MASTICATORY SYSTEM TO THE FACE AND CRANIUM

A study of the anatomy of the face will reveal both the great area over which the muscles of mastication find their origin, and some idea of the influence they exert in the moulding of the features.

The first sketch is a section through a human skull, reduced to its elementary form for simplicity. Three elements are distinguishable: the bony frame, the muscles, and the teeth. Expressed in terms of mechanics, these are, the supporting structure, the working device and the tools.

The framework of a machine is constructed with a view to accommodate the working parts, and sustain the stresses set up in the operation of the machine. The masticatory apparatus may be analysed as a machine.

Several types of movement are indicated in the exercise of its function, viz.: a slow, powerful contraction for crushing and prehension; a rapid movement of little magnitude for talking, and mixing the pulpy mass with saliva; and the complex side to side movements of chewing. Provision must be made to supply all these different forms of muscle action. Nature provides a long bellied muscle for the delivery of considerable force. This is generally slow in action. A short-bellied muscle is provided for the rapid delivery of a force of little intensity. By various combinations of these elementary forms, all the mechanical problems are met. In accordance with the needs of the machine, the skeleton or bony framework presents a form that provides attachment for three main groups of muscles. These are so arranged that by their separate and combined actions, they supply every form of mechanical movement called for in the performance of its function.

The mechanical analysis of the face demonstrates that the parts are certainly well arranged for their purpose. An engineer confronted with the same mechanical problem will solve it in much the same way. The really striking feature of these diagrams is that they demonstrate clearly the far-reaching seats of attachment of the muscles that are constantly brought into play. It proves that the development of the entire face formation is bound up in the action, correct or otherwise, of this muscle system.

EFFECT OF DIET ON THE DEVELOPMENT OF THE FACE

The individual's diet, meaning what he eats and how he eats it, exerts a direct influence on the development of the face in several ways. The child is able to commence life with the teeth, jaws and muscles in working order. A diet of coarse and gritty food requires vigorous use of the muscles. This in turn promotes growth of the parts along normal lines. The muscles originate from the exposed surfaces of every bone involved in the make-up of the internal and external face. All development is dependent for stimulation upon the exercise of these muscles. With a diet such as the one common among children today, requiring practically no exertion from the muscles of mastication, we would therefore expect to find a condition of arrested development about the muscle region. This is exactly what is revealed on wholesale examination of the entire class of individuals for whom living is made easier than was intended in the scheme of development of the face that we have come to regard as normal over the ages. It is among this class of humanity that malocclusions and facial disharmonies are most prevalent. The whole nation is supplied its food in the form of superpreparations, and so the signs are common to all. The entire order of prepared, predigested and concentrated foods actually originated as scientific means of maintaining the spark of life in invalids, not capable of using the masticating apparatus and digestive tract in the normal way.

The correct diet for man must take the shape of foods that require for the first stage of digestion, a vigorous use of the jaws. Nutrition may be maintained with success after a fashion by the common diet of the times, but it spells utter failure as concerns the development of the face to the recognized ideals of form.

Two further demands must be met by the food itself. To maintain a state of cleanliness, the teeth need the natural active scrubbing and flushing that they receive during the mastication of tough foods. This is lost in the change to the common diet used. Besides, the saliva, the natural protective medium that bathes the teeth, is so altered that as a protection against decay, it is practically worthless.

As is to be expected, caries is making enormous ravages in the mouths of all, particularly in children. All the brushing in reason will not serve to eliminate the evil.

The direct result of caries is a favouring of the resulting sensitive area, and a choice for relief of even softer and mushier foods. Subsequent loss of the affected member, which eventually ensues, brings about a long chain of pernicious results. These consist of the absorption of a mass of the supporting tissues, and generally alterations in the alignment of the teeth in their arches by drifting, which frequently result in so modifying the movements of the mandible that much of the original efficiency is lost. At the same time these compromises affect the play of the muscles in their former paths, and so tend to cause a corresponding modification in the mould of the features.

EFFECT OF THE BREATHING FUNCTION ON THE DEVELOPMENT OF THE FACE

As an influence on the development of the face, the masticating system is of prime importance. Next to this comes that part of the breathing apparatus contained in the face. Proper breathing provides the stimulation to growth responsible for much of the development of the central region in the internal face, the nose region, and the chin.

Breathing may take place either through the nose or the mouth. The nose is the correct passage. Should the nose be obstructed by any cause, such as tonsillar or adenoid involvement, a deviated septum, or any mechanical factor, the mouth will be called into use to supply sufficient air. This brings about a constant sagging of the lower jaw, that completely upsets the balance of muscle action between the mandible and the upper face. The whole process of the harmonious forward growth of the face is dependent on the maintenance of this delicate balance. The result is that the two parts are disunited as to their development, with disastrous effects on the entire facial structure.

The slightest tendency to force the lower jaw to a working position anterior to the normal, especially in a child before the age of six, should be viewed with alarm, and strenuously checked. This is a very pernicious agent in disturbing the natural development of the face. Several causes may contribute to such a tendency.

Any inflammation in the throat, the pain of which is somewhat alleviated by such a forward movement of the chin, will induce it. It is often met with as the result of habit, pure and simple. This is responsible for much of the facial malformation commonly attributed to inheritance, unless produced by endocrine disturbance.

The reason we regard such tendencies with concern is that in the very "malleable" jaws of the child, it is easy to induce the teeth of the mandible to assume a position forward to the maxillary teeth. Once caught in this position the relation is established and may only be corrected by orthodontic interference. In this abnormal relation, a new and improper stimulation is set up. This moulding influence from an incorrect path, eventually leads to the assumption of a facial form that was never intended by nature.

EMOTIONAL AND VOCAL EXPRESSIONS AS INFLUENCES ON THE DEVELOPMENT OF THE FACE

At the earliest age, the child commences to make use of the muscles of expression. Forming the superficial layer of the face, these muscles give rise to a great number of the characteristics of the face. All the crying of the infant age, and the facile emotional and vocal expressions of childhood give rise to a constant stream of muscle stimulation. This affords to the face of the individual a characteristic stamp. Nature counts on this early period of activity in her plan for the complete fashioning of the face along normal lines. It seems that she is content with nothing short of the ability to make easy and efficient use of all the organs supplied.

The vocal faculty demands some words on its own account. Nature has gone so far as to cater to the needs of this faculty, by providing a special

muscle arrangement, peculiarly adapted to supply the type of rapid jaw movements required for its exercise. The vocal organs, in function, set up a constant stream of stimulations that are ideal for the development of bone and muscle in nature's plan of growth. The result of the use of this faculty is the production of a characteristic stamp on the features of the individual varying according to the manner of use to which the faculty has been subjected. It follows that a subnormal development is bound to occur in the case of individuals who fall short of the ordinary use of the commonplace means of expression.

A very impressive method of illustrating nature's rigid adherence to the laws of development is to present some anthropological studies of nations whose everyday habits of muscular use differ somewhat, and examine the ensuing differences in facial mould attributable to these causes.

All the original human types present tremendous jaw formations as compared to the later types. Accompanying this development are larger prominences in the regions of the cheek-bones and the sides of the head. The face formations of the existing aborigines, living in their natural environment present much the same picture. Regional development also gives evidence of the liberal exercise of the emotions or the taciturnity of the aborigines. The visage of the ancient North American Indian betrays the fact that he never smiled and rarely talked. A study of the survivors of the race, living under our environment, reveals considerable alteration in the features. The flat plane from cheek to chin is replaced by the familiar roundness that speaks of the exercise of the muscles of expression, which is not a rapid anthropologic change. It is an alteration of muscle activity. The face of the Eskimo is silent witness to the fact that he gives much time to the chewing of leathery material. The smiling Jap presents an overdevelopment of the smiling muscle in the form of a much rounded cheek. The ancient Greek and Roman, with the rich mixed diet of the Mediterranean, given to a free use of the vocal organs, the exercise of much the same forms of polite emotional expression as exist today, present the same features in their historical records as we consider normal and beautiful today. Where the descendants have maintained the same form of living, the same facial moulding persists. In the cases where a change of standards has been forced by geographical or occupational change, the form has altered far from the bounds of heredity. It is a constant source of wonder that the offspring of the immigrant who assumes the habits of the new environment, presents facial characteristics remote from the parents. The cause may be laid to alteration in the activity of the muscles.

According to these observations, the face presents a mirror which reflects many of the activities of the individual that have their seats of origin in the region of the face. Primarily the alimentary character is depicted. There is an indication of the nature of the diet and the mode of treatment it receives from the masticating apparatus of the individual. Thus we may distinguish a type of features portraying great resolution of purpose, as the signs are read, that in reality represent the positive method of attack the individual reserves for his food, rather than the intrepid manner with which

he tackles the grave perplexities of life. Next as factors in determining the mould of the features, are the play of the emotions and associated function of speech. In conformity with the mechanical laws of bone and muscle development, the face must bear witness to the constant stimulation arising from the sources of smiling, talking, singing, crying and subjection to discomfort. The commonly used form comes to the surface.

Because of the biological truth of these facts, the face has been taken to possess significance as to the character of the individual. It is wise that such judgment be made on the basis that the common muscle reactions are responsible for the modelling. The muscle actions of the face are so interrelated that only the knowledge of the ensuing development is actually worthy of any note. Thus one may be led to the error of classing as a determined character a person engaged in the manipulation of a wind instrument. Similarly, because of a pair of thick lips, an unfortunate individual who has striven to manage with the loss of all the teeth but the anteriors, may be set down as a coarse type. To act as an effectual seal, in this case, to prevent dribbling, the lips are forced to take on a powerful development, giving the coarse appearance.

EFFECTS OF UNDERDEVELOPMENT AND MALDEVELOPMENT OF THE PARTS

Measurement of the dental arches of a child of six, when the baby teeth are commencing to be shed, reveals one of two conditions. Either the arch is widening to accommodate the successors, or no change in dimensions has occurred. In neither case is any startling sign noticed, as only a few of the new members are in evidence. It does reveal whether the child is living up to the vital contract as to the use of the parts. Nature will not be cheated. Unused organs are dwarfed in the natural order of affairs. Where no signs are in evidence of increased dimensions of the arches, the cause may be set down to insufficient use, or an interference with the growth regulating mechanism. In each case the signs are the same.

At the age of twelve the great number of permanent teeth have made their appearance. It is much easier to note any deviation from the normal as the indications are considerably magnified. The supporting structures are practically in the same state as at the former period. Essentially, the picture is of a crowded condition wherein to gain much-needed space, the arrangement is altered from the regular even arch design to some form of zigzag, or serration.

Where the mandible is found in a primitive state of development, nature strives to function, even under the most adverse conditions. We note that those muscles which do not depend on the function of the jaw itself are arranging themselves about the modified osseous structure. In this arrangement they assume their operation and tend to further modify the existing structure. The result is that, far from assisting to correct the condition, these muscle stimulations tend to remove the development more remotely from the normal starting point.

Where the mandibular teeth are found to be established in a position anterior to the normal, that is, if in any way the mandibular front teeth are

set in front of the maxillary, the correct paths of muscle play are deviated to abnormal channels. Constant stimulation of bone and muscle growth along the new lines is the result. With relation to the normal human standards, this eventually leads to utterly ruining the face form. When the teeth occlude in this position, each time any facial muscle is brought into play, the condition grows more aggravated. Having in mind the field of influence of the facial muscles, the effect in due time may be conceived.

At a later age, where a considerable number of teeth, or all of them are lost, we find a typical condition. A process of absorption takes place resulting in the loss of much of the bony ridge that formerly supported the roots of the teeth. This in itself does not withdraw any part of the actual bony framework of the face. Should the missing members of the masticating apparatus be substituted in such a manner that little of the efficiency of the regional muscles is impaired, the form of the parts is only slightly affected. Should the missing members not be replaced, considerable alteration is sure to follow, even in a previously well-developed and harmonious face. This is to be expected, since, just as the original development was dependent on use, so also does the maintenance of the condition achieved depend as well on the continued use of the muscles in the same paths as before. The omission or compromise of any single muscle action results in reversion to much the same state, as if the region had not previously developed. It may now be stated, that development in any living structure, is a continuous process, consisting of growth, maintenance and absorption.

In connection with the effect of missing teeth on the face, it should be stressed that there is a definite height to the crowns of the teeth. This serves as a prop, preserving the exact relation of the chin and the lower part of the face to the remainder as well as controlling the movements of the mandible in its socket. It is essential that this relation be maintained. Any change from the normal in this connection, is easily noted by its effect on the appearance of the whole face.

Reviewing, it may be clearly seen that the race is only one of many factors determining the finished development of the face. It is also possible to understand what is taking place in the faces of so many individuals under the present environment. The nature of the diet in vogue, does not call for treatment from the masticating apparatus that it is designed to furnish. The knife and fork have eliminated much of the work of the canine and incisor teeth, as a means of comminuting food. No food served today, seriously requires the use of the premolar or crushing teeth. The third molar is out of place in an outfit that finds small excuse for the eight molars already on the scene. All the trouble caused by the eruption of these teeth for which accommodation is not provided, is nature's indication that the next step will be a modification of all the supporting tissues, to conform with the altered dentition. This of course means the face itself. The orthodontists are familiar with the new standard which is merely an intermediate stage of evolution.

It so happens that for reasons of esthetics and health, the old ideals of the normal and the beautiful face will persist for a long time to come. All the con-

ditions of living pointed out render difficult the realization of this form. It cannot be attained except at the expense of the requisite physical effort.

The time has arrived to discuss corrective measures, such as may be effective. All of these measures are along lines that strive to eliminate the cause of the deficiency, correct the condition, and render possible the normal function of the parts affected.

CORRECTIVE MEASURES

Principally as the result of the forms of food we use, our teeth are highly susceptible to the ravages of decay, which directly affect the function of the eating machine. First there is sensitiveness in the region resulting in a favouring of the area, and a consequent interruption of the stream of stimulations that induce growth in the structure. This is followed by loss of the member involved. There ensues a great loss of efficiency on the side on which the member was set. The effect is in turn expressed on the external formation of the face.

The aim of the dentist is to alleviate the tenderness in the region and restore or replace the affected tooth in such a manner, that efficient functioning may be resumed.

In the matter of impaired breathing, the entire median region of the face is involved. Aside entirely from stimulation arising from exercise of the masticating equipment, development of this region depends on proper functioning of the breathing orifice and passages. The whole region is divided into air spaces and passages, upon the surfaces of which the normal changes in air pressure exert a stimulating influence. The aim of the rhinologist is the correction of all conditions that result in obstructing any of these spaces, so cutting off this source of normal development.

Where the face has failed to assume a normal development, the orthodontist is called in to recognize the defect and institute correction. The commonest defect noticeable is that form in which, from the ages of six to ten, the arches have not responded with the extensive sideways growth, called for to accommodate the permanent teeth. This we consider due to lack of muscular stimulation or defective working of the growth controlling system of the individual.

In any case, the indication is to immediately obtain the increased dimensions of the arch, so permitting the new dentition to arrange itself in working order and making it possible for the apparatus to commence functioning along the lines that induce the countless muscle actions upon which the face depends for its normal moulding.

Two other general defects are observed. One is an underdevelopment of the mandible, and the other an underdevelopment of the maxilla. Each leads to the establishment of a different facial maldevelopment.

Where an arrested growth of the mandible occurs, improper breathing habits are generally associated with the condition. The immediate indication is to develop the deficient region by orthodontic means, at the same time instituting correct nasal breathing. The object is to render possible the normal usage of all the parts, in order that the stream of stimulating actions that are

so vital to proper moulding of the features, be established and maintained as soon as possible.

On the other hand it is generally found that with an underdevelopment of the maxilla alone there is often associated a mandible that is passing through some stage of overdevelopment. This is due to the perversion of the stimulating tendencies of the muscles of mastication. The first indication is to develop the maxilla to its correct proportions, or greater, if required, in order to check these pernicious influences, so that subsequent muscle action be carried on along the lines that promote the correct facial modelling.

These developmental programs may be successfully carried out by orthodontic means. The great object of all this treatment, be it noted, is to bring about proper functioning to the end that all ensuing use of the entire structure may be along the normal lines, thereby maintaining the correct modelling influences.

CONCLUSION

A survey has been presented of the entire process of facial development, and of the internal structure of the face. Power has been given to the determined type of mind which desires only that the path to perfection be pointed out and is then prepared to tread it. The knowledge has been outlined of the part we ourselves play in the composition of that most precious of all art treasures, the living faces of ourselves and those under our guardianship.

For those engaged in the pursuit of art, it is to be observed that the standards of physical efficiency and physical beauty have much in common. Certain it is that a work undertaken in which both standards are regarded, will prove itself supreme. Of such caliber is the Greek ideal, that to this day stands as the height of perfection in art.

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ANTIQUE

BY DR. H. C. POLLOCK, ST. LOUIS, MO.

THE accompanying photograph shows a piece of sandstone rock which has been split off from a stone cliff, in the Southwest United States and it obviously discloses a most interesting piece of ancient history.

Upon observing the photograph closely it will be seen to show the lower left side of the mandible, or lower jaw-bone of the human, the bone containing the mandibular third molar, second molar, first molar and sections of the pre-molar teeth are exposed to view as well. The occlusal surfaces of the teeth are abraded and worn off from use, characteristic of practically all the Southwest ancient Indian civilization in America.



Fig. 1.—Picture of human teeth imbedded in solid rock. Section of lower jaw with wisdom tooth, second molar, first molar, first and second bicuspid on left side. Excavated August, 1926. Note outline of lower jaw.

When the piece of sandstone was split apart, these teeth and the jaw-bone were exposed. The sandstone is hard, its color is red in streaks, brown, gray and some parts in it seem to be of a slate nature. The teeth are very hard and appear to a layman to be more similar in density to the petrified wood of Northern Arizona than anything one can think of. The teeth while seemingly very hard, can be drilled into with a very fine drill, that is the dentin of the teeth may be drilled. The enamel is very hard, compact and brittle. It has turned in the ages from apparently white to a blue smoky color, rather dark, but still retains a lustre and glazed surface.

This specimen was uncovered in August, 1926, by Mr. Paris Engler, in

Southwestern Colorado quite by accident while digging in the side of a cliff, splitting off sections of rock and Mr. Engler called the specimen to my attention to establish whether or not the teeth were from the human.

It is established by geologists, this particular section of the United States was entirely covered by water in remote ages, in turn the sandstone is a result of water formation. Accordingly, here is a specimen of human teeth that obviously lived before the sandstone was formed, was buried in solid sandstone and the mandible entirely encased in stone. Where the rock was broken it happened to break at a point which exposed these teeth to view.

In so far as the writer is aware, human teeth have not heretofore been found embedded in solid stone, in fact, it can be seen it was only by the rarest coincidence that this rock happened to break at a point which exposed these teeth.

The particular district in which the specimen was found is located about 80 miles east of the Mesa Verde National Park, (the ancient home of the cliff dwellers) on the divide between the Los Pinos and Piedra Rivers, several miles from the mouth of the latter which empties into the San Juan River (a tributary of the Colorado).

The upper Piedra and Pine Rivers have long been known to have at one time been the habitat of an ancient Indian civilization and considerable excavation has been done there by J. E. Jeancon of the Colorado Historical Society.

SOME CASES OF INTEREST AMONG L.C.C. CHILDREN*

BY KATHLEEN C. SMYTH, L.D.S.

I WANT to begin with an apology for the poor models I am showing you this evening. In excuse I must plead that the impressions were taken under very unfavourable conditions. They were done in the schools, where hot water is measured out almost by the drop, and where any such operation as impression-taking is apt to be regarded with disfavour and suspicion, not only by the children but also by the teachers! So I must ask you to be lenient. Also I am sorry the photographs are so poor. They were taken indoors and I had not sufficient experience with time-exposures.

I should like to take the opportunity of acknowledging Mr. Kelsey Fry's kindness in having one of the cases radiographed for me at Guy's Hospital.

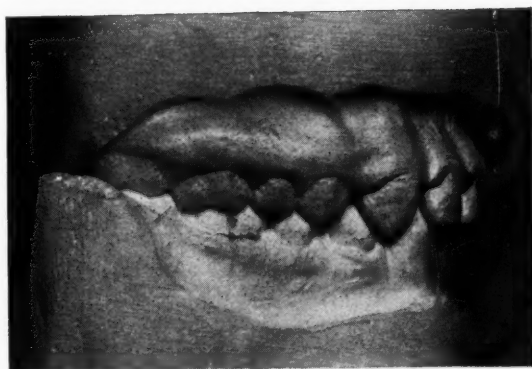
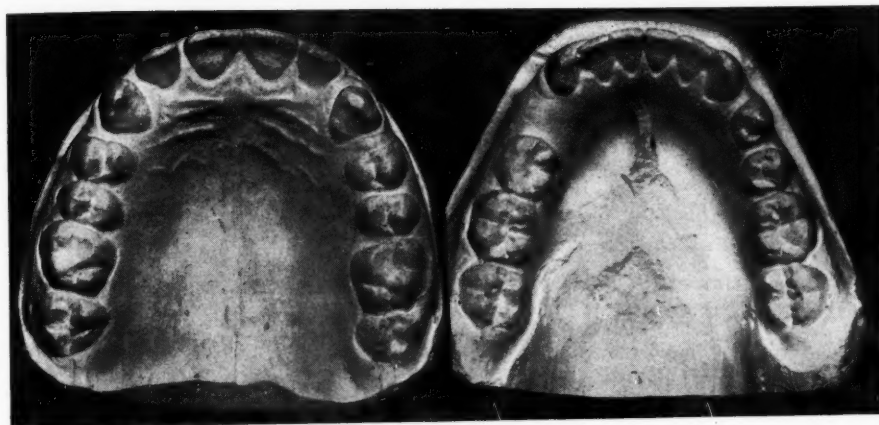
Case I.—A boy, aged 13 years 8 months. Unusually well-developed arches. Beautiful molar occlusion, on right especially. Left upper first premolar has erupted buccally to the left lower second temporary molar, and shows a marked facet on the tip of its lingual cusp, while there is a corresponding facet on the temporary molar. Spacing extremely well-marked, particularly between upper laterals, canines and first premolars and lower premolars. Yet there is distinct irregularity of the lower canines, the left especially overlapping the lateral.

Bearing in mind Dr. Sim Wallace's remarks in the discussion of Mr. Chapman's paper a few weeks ago, to the effect that he had never seen a mouth in which there was spacing when all the teeth were present, I am wondering what will happen when this boy's third molars erupt—whether the molars and premolars could possibly be pushed forward sufficiently far to close all the spaces at present in existence? There appears to be ample room behind the second molars for the third molars to erupt without any difficulty.

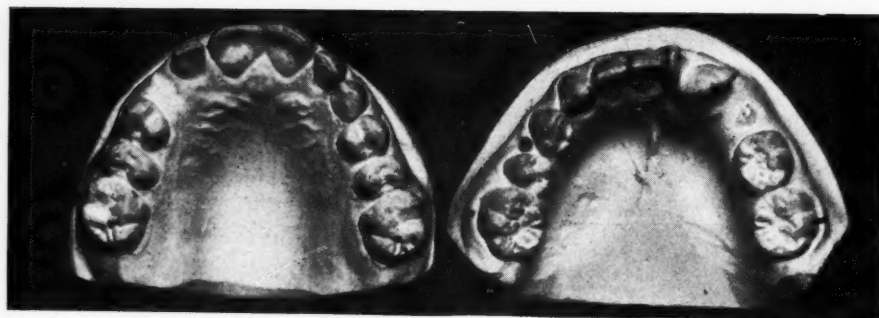
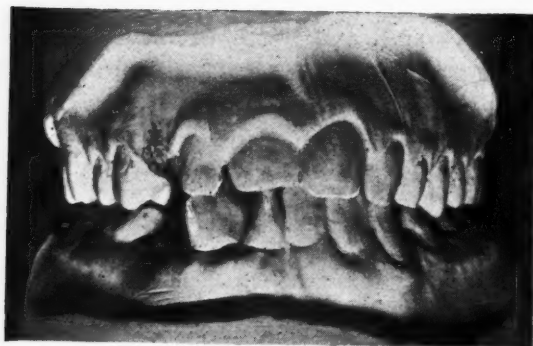
I took various measurements of the boy's jaws and arches, but I will not trouble you with more than three—those taken from the transmeatal axis to the gingival margin between the upper central incisors; the incisive margin of the same teeth; and gingival margin between the lower central incisors. These measurements for this boy are 94 mm., 95 mm., 94 mm. respectively. To give an idea of the unusual size of these I have taken the same measurements of seven other boys, aged between 13 and 14, selected on account of their well-developed jaws, and taken the averages. These work out at 85.1 mm., 86.7 mm., 84.1 mm. respectively. This shows a difference of 8.9, 8.3, 9.9 mm. respectively, between the figures for this boy and those for what may be taken as an average well-developed mouth in a boy of the same age. There is no striking difference in any other of the measurements which I took, though the breadth of the arches is rather large.

*Transactions of the British Society for the Study of Orthodontics.

Case I.



Case II.



Case III.



The boy's home is in Bermondsey, and his living conditions seemed to me fairly poor. It was difficult to get through the hostile attitude of his mother, but she told me that he was breast-fed for nine months, was no trouble to rear, and had never had a doctor in his life. He would eat anything he was given, did not show any special preferences, but was not fond of sweets. He cleans his teeth most days with a piece of flannel and soap.

There are eight other children, all alive and in good health. One brother is said to have a beautiful set of teeth.

Case II.—A girl, aged 10. A very large tooth in right lower lateral incisor region. Right lower central is present, rotated through a right angle; also, as shown in the film, the canine, so that presumably the tooth is the lateral, germinated with a supernumerary tooth. I should like to know whether this is a common variety of germination or not?

One other point is noticeable—the right upper central is kept at a higher level than its neighbour, by the position of the lower central upon which it bites. This tooth (the upper central) is discoloured and slightly loose and the gum around it is inflamed.

Case III.—A boy, aged 9. Marked asymmetry of face, and jaws in particular. Very noticeable when the boy speaks, which he does with a slight lisp. The vault of the palate is distinctly higher on the right than on the left. I have trimmed the models so as to give as accurate an idea as possible of the line of occlusion; it is certainly not exaggerated, but it was difficult to gauge it exactly. The depth of the horizontal ramus of the mandible on either side hardly differs at all. The whole mandible slopes, as shown in the photograph.

The mother's replies were not very enlightening. She says he was a full-term baby, no instruments being used. She cannot remember his being dropped, or having any kind of accident. He is a small, weakly-looking boy.

DISCUSSION

MR. GEORGE NORTHCROFT drew attention to a matter which had struck him in connection with one of the last cases shown, where the right upper central had not erupted to its full length on account of traumatic occlusion with the lower central incisor or supernumerary. He thought the case bore out very well the result of traumatic occlusion, showing the resulting inflammation and periodontal disease which was set up by traumatic occlusion.

MR. NORMAN G. BENNETT thought the first case was particularly valuable, as it showed spacing of the teeth with extremely well-developed arches, and the teeth, although moderate in size, were small for those arches. There was a sort of idea often expressed, not only on this side of the Atlantic but more particularly on the other, that teeth and jaws were always the right size for one another. He thought orthodontists knew that they were not. While some people were willing to admit that the teeth could be too large for the jaws, they seemed reluctant to admit that there should be teeth too small for the jaws. One happened oftener than the other because the jaws grew at a greater rate than the teeth. Cases were seen where the teeth were small for the jaws and produced spacing, that spacing being either in the front of the mouth or towards the front of the mouth; it was very rare between molars. He hoped members would bring forward similar cases in order that the records might be ample.

MR. S. FRIEL said the first case had interested him most because in cases of normal occlusion he had seen none with perfectly straight teeth that had not spacing, and as far as he could gather it was essential to have a spacing between the central and lateral in

order to have the teeth in an even row. Where the teeth were all touching there was a little crowding in the incisor region. That had been his experience, although he might not have examined enough cases to be dogmatic.

MR. PITTS said he had been interested in the second case because he thought the fusion of teeth in the permanent dentition was very rare. He saw quite a number of such cases in the deciduous dentition, usually the fusion of the lower canine and lateral, and not infrequently what must be regarded as either fusion of one of the temporary teeth with a supernumerary tooth or else dichotomy of a tooth-germ. He had seen a case recently in which there was, in the lower jaw on each side, fusion of the canine and lateral, and on the left side of the upper jaw also a fusion of central and lateral in the temporary dentition. He had only seen one or two cases in the permanent dentition.

MR. MAXWELL STEPHENS recalled seeing cases of a father and son in which the fusion of the upper central incisor with the lateral incisor was present in each.

MR. ROBERT LINDSAY said he had been much interested in the suggestion made by Mr. Bennett as to the possibility of having small teeth and large jaws. He believed, roughly speaking, that it was possible to find a large set of teeth in a small jaw, but he was rather inclined to think that there was a developmental difficulty in connection with the matter, and someone suggested that such a thing was quite impossible and that the teeth and jaw would certainly correspond so far as their relative sizes were concerned. Perhaps it was not quite so much of a heresy as Mr. Bennett would suggest.

The PRESIDENT said, in connection with cases of the kind that had been dealt with, the Questionnaire which the Council was about to send out might be helpful to members in suggesting points about which they might inquire with regard to the histories of such cases.

MR. W. RUSHTON said the first models showed that development might be carried almost to a vice, giving the face a very prognathous appearance. It was a question for the orthodontist whether the teeth should not be brought back, probably by judicious extraction, and so reduce the face to more comely proportions.

MISS SMYTH then thanked the members for their remarks.

REPORT OF THREE CASES ILLUSTRATING DEFECTS DUE TO TONGUE HABITS*

BY HARRY E. KELSEY, D.D.S., F.A.C.D., BALTIMORE, MD.

WHEN asked to report a case at this meeting, I agreed to do so without having any definite case in mind. When I recently gave the matter some thought and looked through my cases, I found no individual case, which I thought sufficiently interesting to report that had not been used already to



Fig. 1.—Case 1, slide 1. Front view before and after treatment.

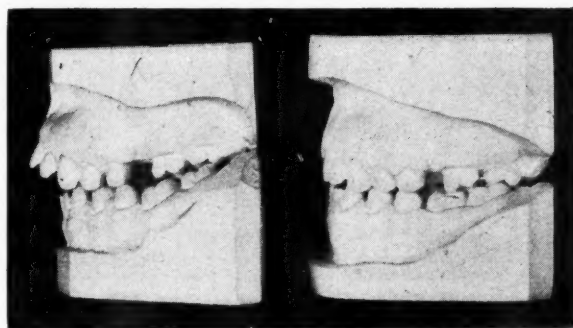


Fig. 2.—Case 1, slide 2. Side view before and after treatment.

illustrate some paper or previous report. The subject of "habit" in its relation to malocclusion is one that is interesting to all of us and I have three adult cases to illustrate this; these might be of interest and possibly of some value. The second case, may not be due to habit but to an oversized tongue.

CASE 1.—The first case of this series was treated many years ago and was a typical anterior open bite. My history on it says: "mutilated by extraction, always partial mouth breather, tonsils also cauterized, tongue resting between teeth is here as always a strong etiologic factor, operation for nasal obstruc-

*Read before the Southern Society of Orthodontists, Louisville, Kentucky, March 30 and 31, 1926.

tion seven years previous." Like other cases of this kind, the mouth breathing was not partial but complete at an early age, but due to nasal operation the patient's ability to breathe through the nose was improved, so that the mouth breathing which was still present was due more to habit and to an undeveloped upper lip. As nasal breathing became more constant the tongue pressed between the anterior teeth was used to stop the air from entering the mouth during respiration, because this was easier than bringing the lips together and excluding the air in the natural manner. This habit became so fixed it resulted in the elliptical open bite, so typical of these cases. The left maxillary first molar and right maxillary first premolar had been extracted, due, the patient said, to caries and with the idea that it would improve the

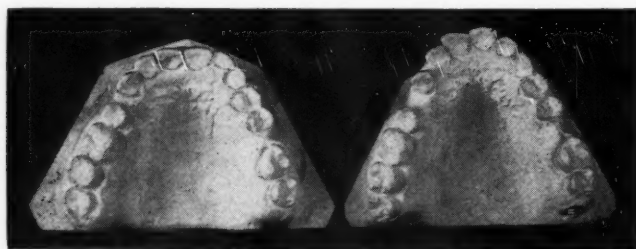


Fig. 3.—Case 1, slide 3. Occlusal view of upper before and after treatment.

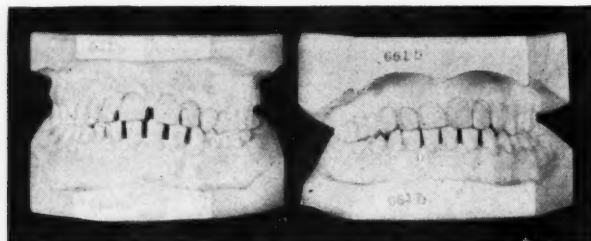


Fig. 4.—Case 2, slide 1. Front view before and after treatment.

malocclusion at the same time. As much of these spaces was closed up as was necessary to bring the anterior teeth into proper relation, and no more, because at this patient's age I felt that the efficient occlusion which she had would be marred more than improved by attempting to close the space entirely. The causes of the malocclusion were explained to the patient and she was told the correction could be made only if she discontinued the tongue habit.

Frequently adult patients will discontinue it at once and forever; it was so in this case, and the treatment progressed to a successful conclusion by means of light labial arches, attached by bands to the anterior teeth and direct intermaxillary elastics. The appliances were left in for some months as a means of retention after full movement of the teeth had been secured; the elastics for a time were worn at night only and then were discontinued

altogether. There was no recurrence and never has been. The finished case is illustrated here by the slide of the second models which were taken a year or so after the appliances were removed.

CASE 2.—I believe this case was due to an oversized tongue rather than to a tongue habit, although patient said she was conscious of pressing the tongue against the teeth. The malocclusion consists of protrusion and spacing of maxillary and mandibular anterior teeth and the patient was told, if conditions were due to oversized tongue, a Hawley retaining plate would have to be worn at night indefinitely, to prevent recurrence. This case was completed in six months' or a year's time and was successfully retained for a

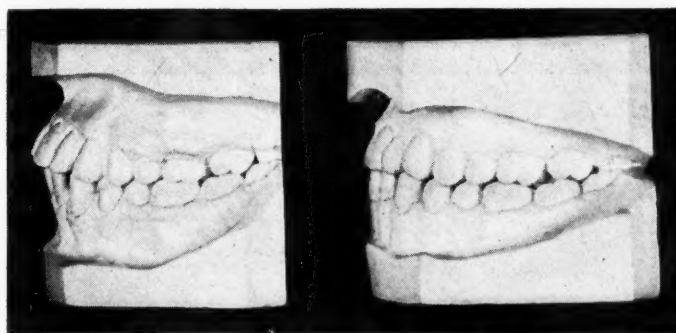


Fig. 5.—Case 2, slide 2. Side view before and after treatment.



Fig. 6.—Case 2, slide 3. Occlusal view of upper before and after treatment.

couple of years, by means of a Hawley plate worn at night. Patient has not been seen for about two years, but I feel sure she would come in if there were any recurrence.

CASE 3.—This case was also a Class I malocclusion, characterized by protrusion of all maxillary teeth anterior to the first premolars.

History.—There is spacing between all of these teeth which seems to be due either to the habit of pressing the tongue against the teeth or to the tongue being somewhat oversized, though it is probably the result of habit inasmuch as the mandibular teeth are not affected. Patient thinks she was bottle baby. Biting the nails and pressing the tongue against the maxillary

teeth forcing them labially, are the only habits patient has ever had, and she has entirely overcome the habit of biting her nails, which would indicate that she may probably overcome the other habit also. Patient is not conscious, however, of any tongue habit. The breathing seems to be perfectly normal, although the patient believes she sometimes sleeps with her mouth

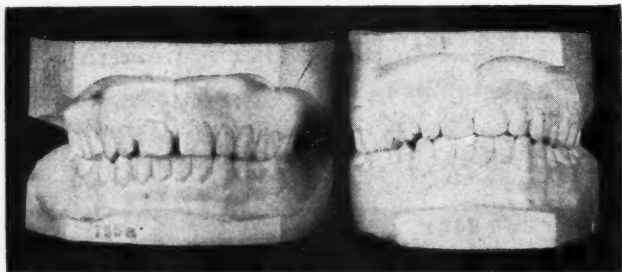


Fig. 7.—Case 3, slide 1. Front view before and after treatment.

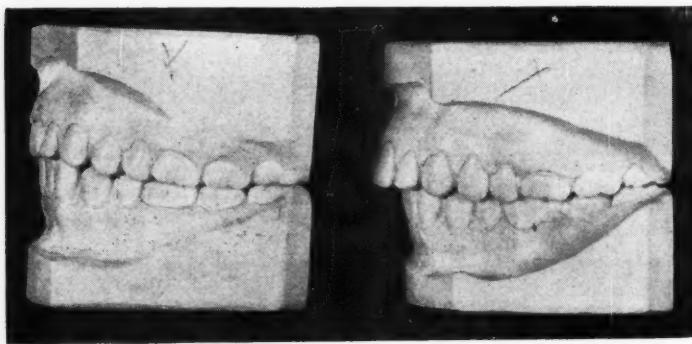


Fig. 8.—Case 3, slide 2. Side view before and after treatment.

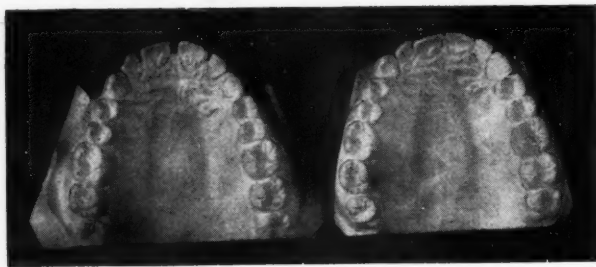


Fig. 9.—Case 3, slide 3. Occlusal view of upper before and after treatment.

open. Treatment consisted in "shrinking up" of anterior teeth by drawing them posteriorly, by means of the labial arch with spring loops, assisted by intermaxillary elastics.

The result was satisfactory and gives the patient a practically perfect denture. This case was completed about three years ago, and the patient is still wearing a Hawley retaining plate at night. When left off for more than

a week a recurrence begins to be manifest, which seems to indicate that the patient still does not either find room enough in the mouth for her tongue or continues to press against the maxillary anterior teeth with the tongue.

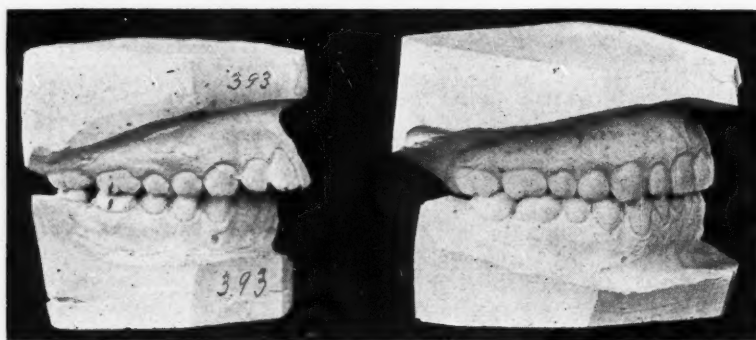
My conclusion is, that in cases like the first, where there is a definite habit which can be discontinued, retention is not difficult. In fact the case is practically self-retaining. In those cases where the tongue is very large, or where the patient cannot overcome the habit, retention must be maintained indefinitely, perhaps always.

CASE REPORTS*

BY R. W. GASTON, D.D.S., NEW ORLEANS, LA.

FIGS. 1 and 2 represent the case of a boy aged fourteen. This shows distal occlusion on both sides (A) with narrowing of the maxillary arch and deep overbite. The mandibular incisors are biting against the palatal tissue $9\frac{1}{2}$ millimeters back of the incisal edges of the maxillary incisors.

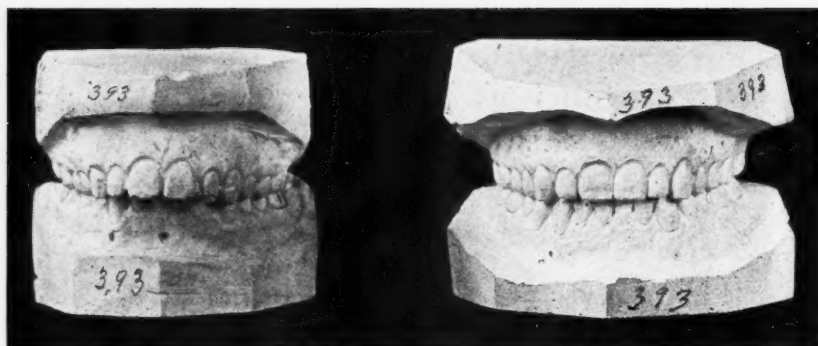
The patient was a mouth-breather, though adenoids had been removed a short time previous to the beginning of the orthodontic treatment. The boy weighed 95 pounds.



A.

B.

Fig. 1.



A.

B.

Fig. 2.

Treatment was begun in October, 1920. After about a year and a half of treatment, what seemed to be a normal occlusion had been established, the maxillary arch was widened and the overbite was corrected. The wearing of the appliances was continued for about a year and a half longer, when all appliances were removed, and the case was inspected at intervals to see whether correction was being maintained, which seems to be true as shown by later models (B). These models were made from impressions taken March, 1925, being about one year and a half after all appliances had been

*Read before the Twenty-fifth Annual Meeting of the American Society of Orthodontists, held at Atlanta, Ga., April 14-17, 1925.

removed. They show the corrected condition at this time, indicating that there had been no appreciable change since removal of the appliances.

Figs. 3 and 4 show photographs of the patient at the beginning of treatment, and Figs. 5 and 6 were taken March, 1925, at the time the last models were made.



Fig. 3.



Fig. 4.

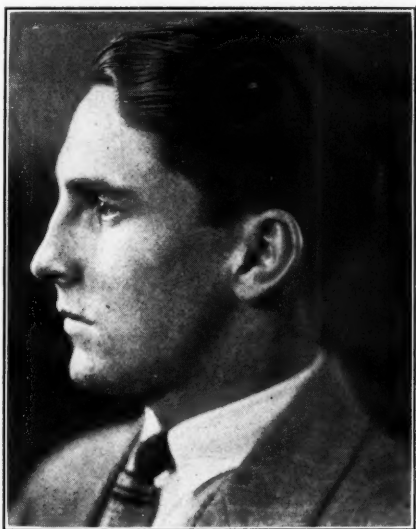


Fig. 5.



Fig. 6.

Figs. 7 and 8 show the case of a girl aged twelve. There was complete distal occlusion on both sides. This case was further complicated by the mandibular arch biting entirely inside the maxillary arch from one second premolar around to the other second premolar on the opposite side, the mandibular teeth, including the first premolars, striking against the maxillary palatal tissue. All of the gingival tissues were greatly hypertrophied and inflamed, especially the maxillary, probably because of the lack of function of the lips.



Fig. 7.



Fig. 8.



Fig. 9.

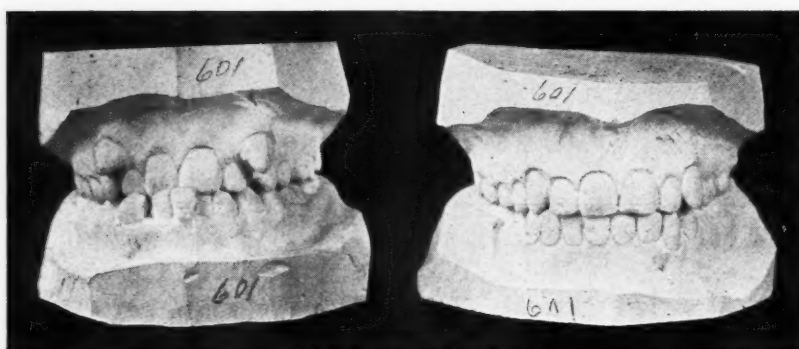


Fig. 10.

The treatment was begun September, 1921, and progressed with less trouble than I had expected, and at the end of about a year and a half practically normal occlusion had been established. Retaining appliances were used about two years longer until January, 1925, when all appliances were

removed and the models (*B*) Figs. 7 and 8 were made. At this time the condition of the gum tissue had greatly improved and the mental attitude of the patient was much better, though she had shown herself a most ideal patient during the entire treatment, carrying out instructions most faithfully.

Figs. 9 and 10 show neutroclusion. Case of a boy aged thirteen. There was a marked lack of development of both arches necessitating a great deal of expansion. Treatment was begun in July, 1923. Because of the great amount of movement required of the maxillary incisors, bracket bands were placed upon these teeth and a ribbon arch used so as to get bodily movement and carry them to place without tipping. Movement was continued until March, 1925, when the condition shown in Fig. 10 (*B*), was obtained. Treatment was carried on rather slowly so as to give time for as much bone development as possible as well as the tooth movement shown in (*B*) Fig. 10, which model was made March, 1925, at which time the ribbon arch and bracket bands were removed and replaced by the lingual arch to act as a retainer and also to gain the subsequent movement that will be necessary, as I consider that it will require at least another year or more before this case is completed.

VERTICAL DEVELOPMENT THROUGH THE USE OF CAST BITE PLANES*

By E. R. SCHROEDER, D.D.S., ALAMEDA, CALIF.

THE following models are carved as to Dr. Dewey's method to obtain the given height from incisal edge to base and also from molar to base. These measurements are equal. Model I, December, 1922. Model II, January, 1924.

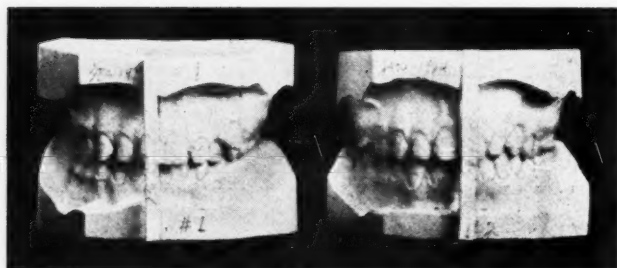


Fig. 1.

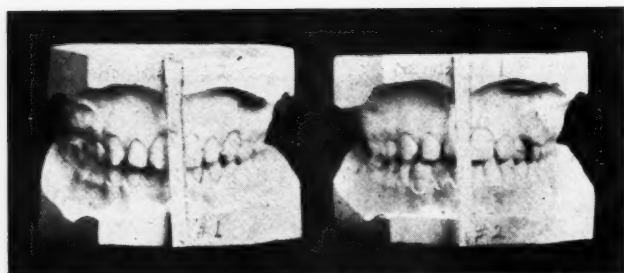


Fig. 2.

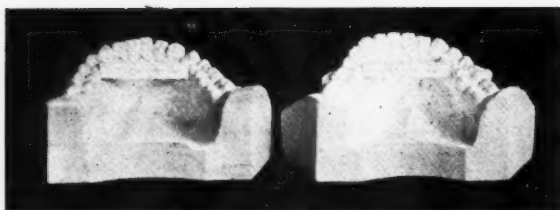


Fig. 3.

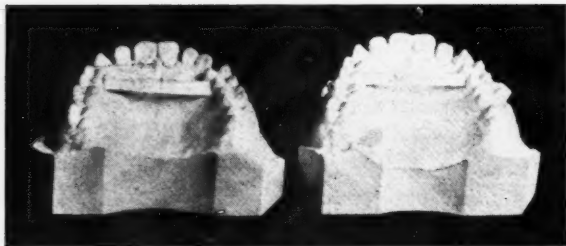


Fig. 4.

*Read before the Twenty-fifth Annual Meeting of the American Society of Orthodontists, held at Atlanta, Ga., April 14-17, 1925.

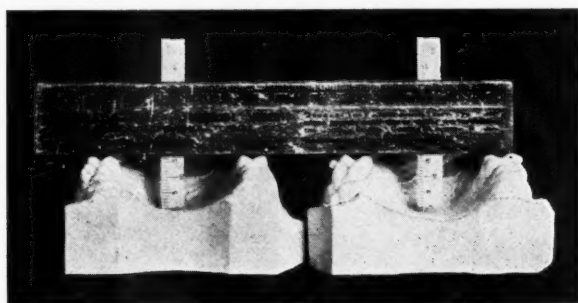


Fig. 5.

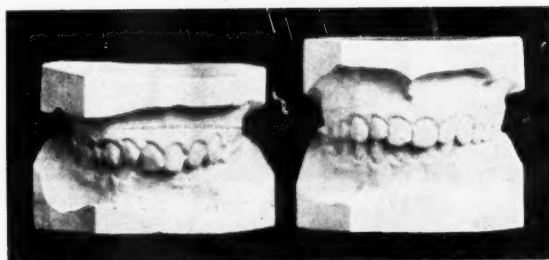


Fig. 6.

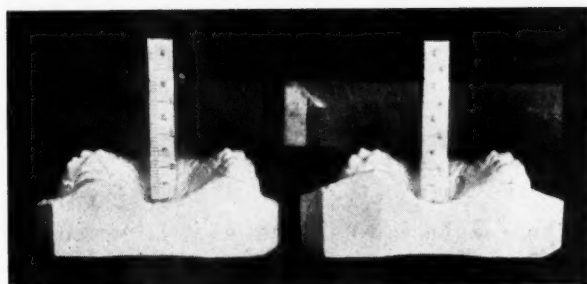


Fig. 7.



Fig. 8.

The same measurements applied in Models I and II with the same given distance.

Fig. 1, Model I, shows horizontal plane with forward incline. Fig. 1, Model II, shows horizontal plane; in Model I the measurement from upper base to lower base is $1\frac{1}{4}$ inches; in Model II the measurement from upper base to lower base is $1\frac{3}{8}$ inches.

Fig. 2, upper Model II, placed on lower Model I, increases the distance from base to base. Upper Model I is placed on lower Model II, resulting in a horizontal upper base.

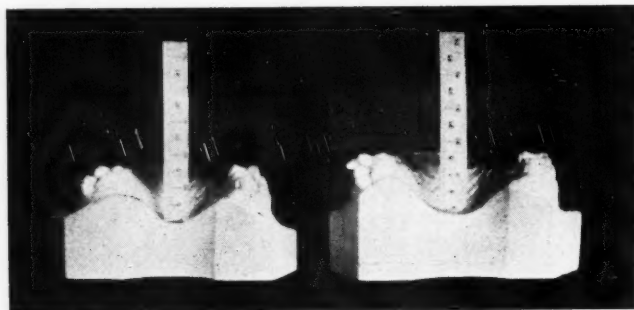


Fig. 9.

Fig. 3, Model I, without any lateral change except lower second molars with lateral development.

Fig. 4 shows slight lingual change, width normal as to Dr. Bogue theory.

Fig. 5 shows vertical development.

Fig. 6 shows horizontal plane with forward incline and corrected case with a horizontal plane.

Fig. 7 shows vertical development.

Figs. 8 and 9 are the same as the preceding case.

The object of these slides is to show that it is possible to obtain vertical development with upper, as well as lower, teeth.

OFFICE RECORDS*

BY ERNEST N. BACH, A.B., D.D.S., TOLEDO, O.

I AM indebted to Drs. L. J. Porter and W. S. Sargeant for their systems and suggestions in the office records which are about to be described.

Fig. 1 illustrates the folder cover of which there is one for each patient. The name, address, etc., is spaced as shown. The remaining records are all inclosed in this folder which in turn is filed away alphabetically

Fig. 2 illustrates the history record of the patient which is used by many orthodontists. Diet during gestation and record showing time of eruption of deciduous and permanent teeth have been added.

Name	Frank Smith	Case No.	562
Address	382 Clark St.	Telephone	Business Park 4689 Residence Barry 675
Dentist	L. M. Jones		
Physician	B. E. Potter		
Sent By	Mr. L. H. Frank		
Treatment Started	Maintainer Applied	Treatment Concluded	
10-16-24			

Fig. 1.

Illustrates inside of folder Fig. 1.

Too frequently white spots, white lines, and cavities have been laid at the door of the orthodontist and it is for this reason "Tooth Pathology," Fig. 3, has been added to this record. Each surface of the tooth is checked over with mouth lamp, mirror and explorer after the tooth has been dried with compressed air. Faint white lines show up only after the surface has been dried with alcohol. During the last fifteen months of observation only one molar has been recorded which did not present a white line on the buccal and cervical aspect. Cavities, white lines and spots and fillings are indicated with red ink. Teeth are numbered in order from superior right to left; to inferior left to right. Surfaces are numbered: mesial—1; distal—2; buccal—3; lingual—4; occlusal—5. Black ink is used to note fillings inserted during treatment of the case, and are recorded when the case is dismissed.

*Read before the Twenty-fifth Annual Meeting of the American Society of Orthodontists, held at Atlanta, Ga., April 14-17, 1925.

Type of occlusion is noted, x-ray findings are listed and kept in the folder with the other records.

On this same sheet is listed the "Instruction Record." Present diet is taken of each patient and another diet prescribed where indicated. Record is made regarding time of starting and finishing of muscle exercises and wearing

Name (child) Frank Smith.		Time first temporary tooth appeared			
Age	9	Time permanent teeth appeared			
Parent or Guardian	R.E. Smith	1	9	17	25
Address (Res.)	627 Forrest St.,	2	10	18	26
Phone	Barry 675	3	11	19	27
		4	12	20	28
		5	13	21	29
		6	14	22	30
		7	15	23	31
		8	16	24	32
Address (Bus.) 1678 Park Ave.					
Phone Park 4689					
Referred by Mr. E.H. Frank					
Dentist L.M. Jones		Parents			
Address 722 8th st.		Father			
Breathing		Facial form			
* Mouth		Occlusion, etc.			
* Nose					
Adenoids. Removed 8-6-18.		Mother			
Tonsils. 8-6-18		Facial form			
		Occlusion, etc.			
		Diet during gestation			
Habits.	{ Tongue Lip Thumb Finger Pacifier				
Hearing					
Weight.					
Height					
Hereditary Manifestations					
Pathological condition					
Head					
Post nasal					
How fed in infancy					
Recurrent attacks of colds					
Sickness, fevers during childhood.					

Fig. 2.

of intermaxillary elastics. Parent is notified when patient is not keeping appointments, not keeping teeth clean, not wearing rubbers, and not performing muscular exercises.

On the reverse side of this sheet, Fig. 4, is illustrated the complete appliance record. Appliances are removed approximately every four months. Date of setting and removing are noted in the two left columns. The next wide column is left for the description of the maxillary appliances and so on across the

sheet. On the lower half of the sheet is recorded the broken, lost, loose, repaired appliances, etc.

Fig. 5 illustrates a time record card which is used for each patient. The appointments are made on this card, the time recorded, in minutes, taken for each sitting; broken, cancelled and time of next appointment is made on this card also. At a moment's notice this record gives:

Name Frank Smith		TOOTH PATHOLOGY		Case No. 563											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
1	2	3	4	5	6	7	8	9	10	Occlusion: Missing: # 13 Impacted: NONE X-rays: Devitalized: # 3 Supernumerary: NONE General condition: { Hard. Soft: X Average					
20	19	18	17	16	15	14	13	12	11						
Red Ink—Caries and fillings when examined C.—Caries. F.—Fillings. Black Ink—Fillings when case dismissed.															
INSTRUCTION RECORD															
Present diet.	Muscle exercises. No. 1-2-3 1-4-25 Begun.					Note to Parents 1. Not keeping appointments 2-4-25 3-1-25									
	Finished.					2. Not cleaning teeth. 3-1-25 3-10-25									
Prescribed diet.	Intermaxillary elastic. No. 1-2-3 Begun.					3. Not performing muscle exercises									
	Finished.					4. Not wearing rubbers.									

Fig. 3.

The number of appointments given to date.

The date of each appointment.

Time spent on each appointment or the entire case.

Cancelled appointments. (Abbreviated C.A.)

Broken appointments. " B.A.

Illness. " Ill.

House calls. " H.C.

New appointments. (Date indicated.)

A red card, Fig. 6, is used to indicate time of removal of appliances. Name and case number, only, appear on this card. This and the time card are placed in a file in which appear cards bearing the days and months of the year. After the appliances are set, the red card is advanced four months in

the file and automatically appears at the end of the four month period at which time the appliances are removed and an appointment made with their Dentist for prophylaxis and work required of him. The time card on which is listed the next appointment is advanced to the day on which the patient is next due.

Parents are notified by card Fig. 7, when appointments are not kept, and instructions not followed. These are checked off on the card, the card mailed to the parent or guardian and the date of mailing recorded on the record card, Fig. 3. This forwards a definite word to the parent and saves a letter and time.

Name	Frank Smith	Remove Appliances	Case No. 562.

Fig. 6.

DR. ERNEST H. BACH 318 OHIO BLDG. TOLEDO <small>ORTHODONTIA EXCLUSIVELY</small> MAIN 4830	
<u>Mrs. R. K. Smith</u> <u>627 Forrest St.</u> <u>Toledo, O.</u>	<u>3-1-25</u>
BELOW ARE CHECKED THE INSTRUCTIONS WHICH YOUR <u>son</u> IS NOT FOLLOWING AS REQUESTED. YOUR SINCERE COOPERATION IS NEEDED, IF WE ARE TO BE SUCCESSFUL IN THE WORK.	
<input type="checkbox"/> KEEPING APPOINTMENTS <input type="checkbox"/> KEEPING TEETH CLEAN	<input type="checkbox"/> NOT WEARING RUBBERS <input checked="" type="checkbox"/> PERFORMING MUSCULAR EXERCISES REGULARLY
YOUR ATTENTION HAS BEEN CALLED TO THIS <u>once</u> BEFORE.	
YOURS VERY TRULY.	

Fig. 7.

Size of folder, Fig. 1, 9" x 14", folded twice to 5¼" wide.
 " " record, " 2, 9" x 15", " " " 5 " "
 " " " " 3, 9" x 10", " once " 5 " "
 " " " " 4, same as and reverse of Fig. 3.
 " " " " 5, 5" x 9", (card).
 " " " " 6, 5" x 9", (red card).
 " " " " 7, 3½" x 6", (card).

The size of records and folder is arbitrary.

CASE REPORT*

BY MARTIN DEWEY, D.D.S., NEW YORK CITY

THE case I wish to present is that of a young man seventeen years of age whose mouth is very badly mutilated, and in addition he is suffering from the effects of a mastoid operation which produced partial ankylosis on one side. The mandible is very greatly underdeveloped and he has occlusion only on the left side of the mouth. On the right side the mandibular teeth completely occlude lingually to the maxillary teeth. As a result of this malocclusion there is a loss of function on one side which tends to increase the lack of development of the mandible. The face showed great distortion as a result of the ankylosis of the established function.

Our plan of treatment was to expand the mandibular arch to such an extent as to produce occlusion on the right side. As a result of this treatment and the establishment of mastication on the right side, the mandible has developed to very nearly normal and simply demonstrates that the established function has produced development in the body of the mandible.

DISCUSSION

Dr. H. E. Kelsey.—I would like to ask whether this case had ever been ankylosed.

Dr. Martin Dewey.—Partially.

Dr. Kelsey.—It looked like it had been operated upon.

Dr. Dewey.—Not for ankylosis.

*Read before the Twenty-fifth Annual Meeting of the American Society of Orthodontists, held at Atlanta, Ga., April 14-17, 1925.

DEPARTMENT OF
ORAL SURGERY, ORAL PATHOLOGY
AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

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**SURGICAL-ORTHODONTIC CORRECTION OF A MACRO-
MANDIBULAR DEFORMITY. CASE REPORT***

BY R. C. WILLETT, D.M.D., PEORIA, ILL.

IN THE presentation of a detailed report of this case, the object is to show definite evidence in proof of results obtained through a close cooperation of the oral surgeon with the orthodontist, in their attempt to correctly solve a serious problem, which involved the occlusion of the teeth, the proper functioning of the jaws and the outward physical appearance of the patient.

Up to the present time the relation existing between the oral surgeon and the orthodontist has been that of a mild and friendly interest, rather than one of enthusiastic, mutual research and study, with final effective collaboration in action; and this line of professional demarcation has been particularly regrettable in cases where a common sense view of the problem presented showed plainly that the two fields were involved and overlapped.

In the case selected for the report we were confronted by a true type of macromandibular deformity, which in the malformation of the mandible, and its correction, was similar to cases recorded by Blair, Harsha, Gilmer and others.

CASE HISTORY

The patient, Miss C. C., aged seventeen years and five months, on May 26, 1923, was referred to us for consultation relative to the correction of a dento-facial deformity. An examination revealed the following facts:

Family History.—The mother died of tuberculosis in the early life of the patient. Other members of the family were tuberculous, but otherwise the history was negative.

Personal Past History.—The patient had had rachitis and diseases of early childhood. Later she had sustained long bone fractures in situations where

*Read before the First International Orthodontic Congress, New York City, August 16-20, 1926.

a child of her age, possessed of normal bone resistance, would have escaped injury.

History at Introduction.—The examination showed an emaciated patient (Fig. 1) suffering from anemia, induced partly by chronic hypertrophied and infected tonsils, and partly by her inability to masticate.

Mental State.—The close relation of a physical subnormality to mental disturbance was noticeable, the patient being decidedly aggrieved because of her outward appearance. This condition of the mind had developed an antagonistic attitude toward society and an unfavorable view of life in general. The patient claimed to be misunderstood by the members of her family and near relatives, because of her manner of dress and artifices used by her. The behavior generally was a marked reaction to an inferiority complex, the basic cause of which was the deformity.



Fig. 1.

History of the Complaint at Presentation.—Deformity of the mandible had developed gradually; evidently it had existed through the period of first dentition, and had continued to her present age of seventeen years. The development of the maxillary arch, and the palate, were within normal limits (Fig. 2).

There was an absence of other bone enlargements. The age of the patient, and the time of the onset, precluded a diagnosis of acromegaly.

PRELIMINARY CONSIDERATION OF THE CASE AND ITS TREATMENT

The severity of the deformity of the mandible, and the malocclusion of the teeth, being beyond the scope of orthodontic treatment, a surgical operation was imperative.

The surgical-orthodontic interference in this case had three aims:

1. To establish the occlusion and functioning of the teeth.
2. To correct the deformity involving the outward physical aspect of the patient; a question of esthetics.

3. Most important of all, to remove the mental complex by eliminating its cause.

We sought the advice of Dr. Louis Schultz, of Chicago, who had fully demonstrated his ability in the practice of oral surgery. Dr. Schultz entered the case, and together, for over two years, we made a careful study of the conditions, and carried to completion, the preparation of our patient for the proposed operation—a bilateral resection of the mandible.

The preparation for the final operation included preliminary treatment and a tonsillectomy; also the extraction of all pulpless teeth of the mandibular arch. The reaction of the patient to anesthetics, and her susceptibility to infection, was carefully noted throughout these minor operations of preparation.

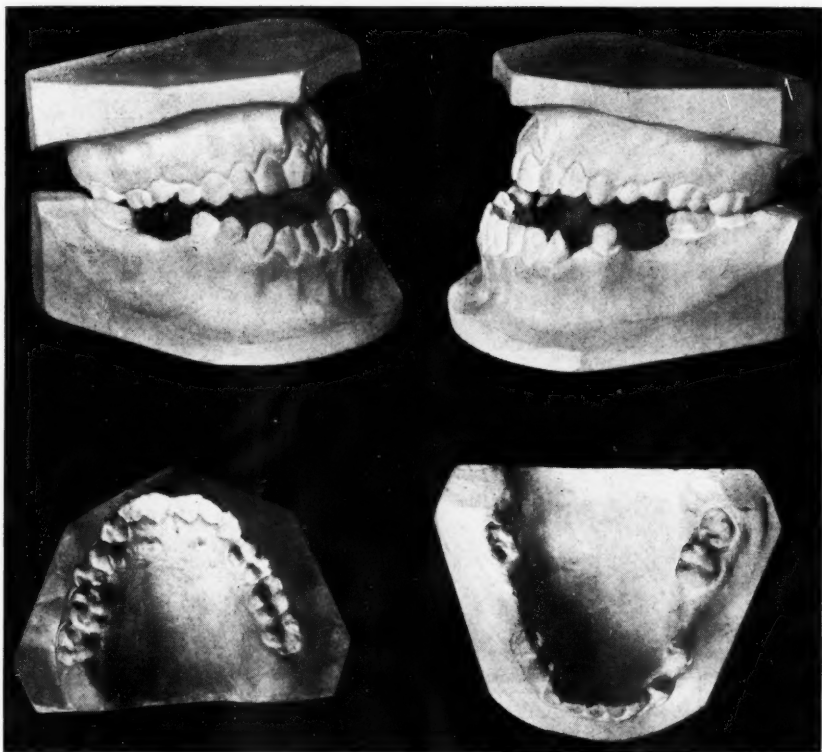


Fig. 2.

Some compromise was made in the selection of the field for operation. The mandibular right second molar had been extracted just before she came under our care, and because the left first molar was pulpless, and rarified areas around the apices were shown by the radiogram, that tooth was extracted. The third molars were in a state of eruption and the one on the right side was to serve as a future anchorage for post-maintenance appliance.

The full eruption of the right mandibular third molar, and the edentulous areas, as they appeared when ready for the final operation are here shown (Fig. 3).

FINAL PREPARATION

During the month of May, 1925, final preparations for the operation were made. Plaster models were made and the base of the lower model was cut to

accurately fit a metal track base (Fig. 4), and was mounted upon it (Fig. 5), before setting back the anterior section (Fig. 6).

Allowance was made for the imperfections of occlusion due to the perpendicular cut, and the buccal malposition of the mandibular right third molar; these conditions would be improved in the actual operation upon the patient, by following more scientific lines, as determined in the formula (Fig. 7); also in the adjustment of the post-maintenance appliance (to be described later) which corrected the buccal malposition of the right third molar (Fig. 8).

CONSTRUCTION OF THE APPLIANCE

The next problem in the work of preparation was the construction of a maintenance appliance that would meet all requirements of the proposed operation and postoperative treatment.

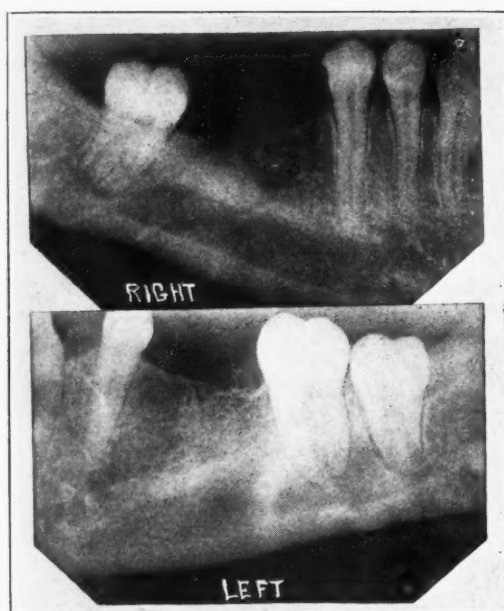


Fig. 3.

The appliance was designed to meet the individual demands of this particular case, rather than to be a copy of any type of apparatus previously used by other operators.

The selection of suitable materials was of the utmost importance. Precious metal alloys of gold and platinum, that would not corrode, or in any way produce unhealthful conditions of the soft tissues, were used.

FIVE ESSENTIAL FEATURES OF THE APPLIANCE

1. Anchor bands of sufficient strength to resist any necessary stress applied in adjustment, or *during fixation*.
2. All soldered and adjustable attachments to anchor bands cemented upon the teeth in advance of surgical procedure, so placed that they could not interfere in any way with the resecting operation.
3. All connecting parts of the mandibular appliance, so designed as to insure their easy assembly; and certain parts so constructed as to allow some

range of clearance, while still remaining under control for the postoperative immobilization.

4. The appliance so constructed as to be removable in sections, in case it should prove advisable to retain one side in partial or complete fixation for a longer period than the other.

5. In view of postoperative catastrophe, such as nausea, the fixation of the jaw to be made certain; and to this end, the rigidity of the assembled appliance, mounted upon resected plaster casts, to be thoroughly tested. With such an appliance for the mandibular arch, the ligating together of the jaws could be dispensed with, until all danger of nausea or coughing should have passed.

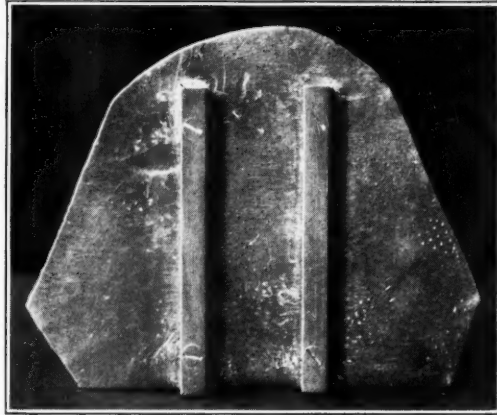


Fig. 4.

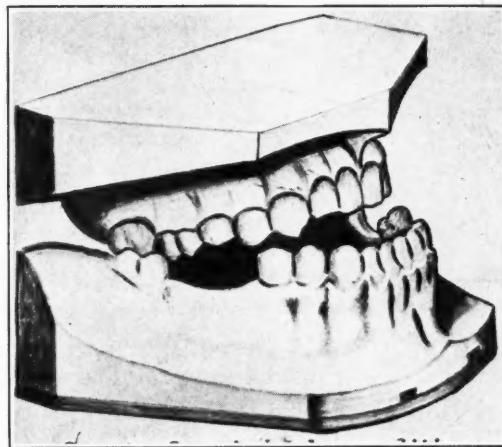


Fig. 5.—Cast of original condition, on metal track base.

THE APPLIANCE AND ITS WORKING PARTS

Maxillary Appliance.—Heavy coin-gold bands were made and fitted to the first molars; buccal tubing, 0.040" bore, closed at distal end, was soldered on the buccal, for the reception of the alignment wire.

Gold alloy bands were made for the central and lateral incisors, with hooks open to the cervical soldered in a central position on the labial. When the alignment wire was in place, it rested in the hooks, serving as an attachment when the jaws were ligated together (Fig. 9).

Mandibular Appliance.—Heavy coin-gold bands were made and fitted to the right third molar and premolars, the premolar bands being united. The same preparation was made for the second molar, first premolar and canine, on the left side, the premolar and canine bands being united.

Two vertical tubes, 0.035" bore, were soldered in a vertical position on the buccal of each molar band. An open-sided tubing of sufficient size to receive a clasp metal wire, (truss) 0.055", was soldered in a horizontal position on the buccal of the united right premolar bands.

A sleeve was fitted to the mesial end of the open buccal tubing, with a tongue of metal that fitted into the open space of the open tubing. A hold-down lug was soldered to this sleeve, and served two purposes: first, that of

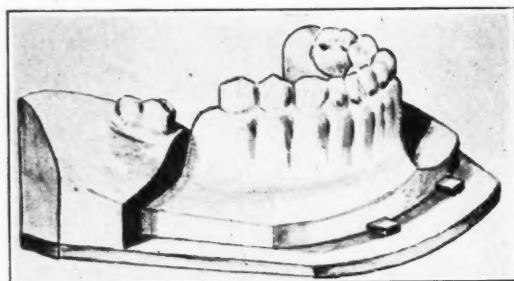


Fig. 6.—Cast, on track base, cut, and resected 10 mm.

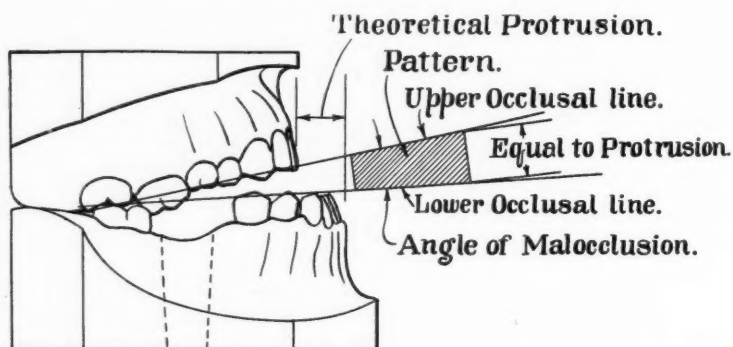


Fig. 7.—Formula for determining amount and angle of resection of lower jaw.

stabilizing the sleeve when it was placed over the end of the tube; and, second, that of serving as a resting place for a wire ligature in the final assembling of the appliance. A similar hold-down lug was soldered to the heavy truss, so placed that it rested in the buccal occlusal groove of the molar. That end of the truss wire was supplied with two pins on the distal end, which fitted without binding in the vertical tubing on the buccal of the molar band. The left side was supplied with the same type of attachments.

The four anterior teeth were covered with a thin veneer casting of high platinum content. Four hooks, open to the cervical, were soldered to serve as an attachment in the process of ligating the jaws together, as has been previously shown (Fig. 9). This illustration also shows the manner in which the sleeve fitted the mesial end of the open tubing when the truss was in place. The parts composing the complete appliance are here shown (Fig. 10).

In order to supply a range of adjustment, and to allow for the unavoidable variation in the actual operation, from that of the resection made on the plaster cast, the mesial end of the truss wire was a few millimeters short of reaching the closed end of the sleeve cap. This is shown in assembled cross sectional view (Fig. 10, *G*, *C* and *H*).

With the maxillary appliance completed, and that part of the mandibular appliance which consisted of the anchor bands securely cemented in place (Fig. 11), the patient was ready for the operation, which was performed by Dr. Schultz, June 16, 1925.

THE OPERATION AND POSTOPERATIVE TREATMENT

In the surgical phase of this case, the technic employed by Dr. Schultz was only decided upon after a careful review of record operations for the correction of similar deformities. Neither Babcock's operation, which severed the ramus horizontally above the mandibular foramen, nor the technic employed by Harsha in the removal of a rhomboid section from the body of the jaw be-

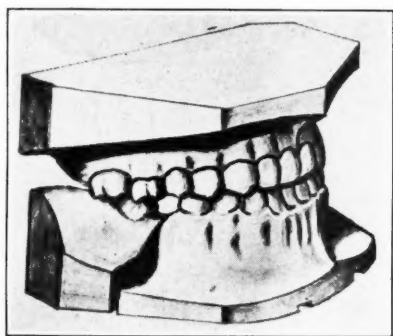


Fig. 8.—Showing adjustment made by bending truss to correct buccal relation of molar occlusion on right side.

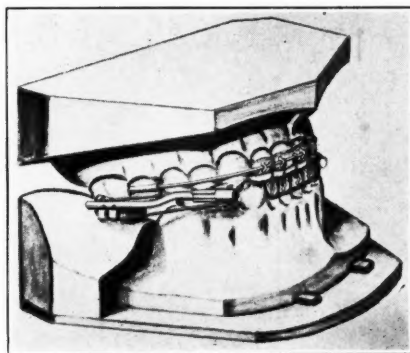


Fig. 9.—Upper and lower casts, showing appliances and jaws as ligated.

tween the last molar and the ramus, would produce the results desired in this case.

The former was impractical because an appreciable gap would be caused in the ramus by the raising of the resected segment in order to bring the anterior teeth in occlusion; and in the healing process this would tend to separate the anterior teeth during the period in which maturing tissues were contracting.

The latter was not feasible because there was not sufficient room between the last molar and the ramus for the removal of a rhomboid section of the proper size.

An operation along the lines followed by Blair was finally decided upon; but instead of having normal premolars removed, Dr. Schultz accepted the handicap of a large anterior fragment, deprived of its principal blood supply—this for the sake of utilizing the space left vacant by the extraction of the right lower second molar and ridding the patient of a questionable lower first molar. The remaining lower teeth contained vital pulps.

The relation of the lower to the upper teeth was carefully studied and two wedge-shaped patterns were prepared, one for each side, and were marked respectively: "right" and "left," since there were slight variations in the two sides. The widest part of the patterns corresponded to the actual protrusion; hence the patterns were one centimeter at their widest ends. At the time of the operation these patterns were included with the instruments to be sterilized.

In the operation, on June 16, 1925, the anesthetic used was aseptic ether.

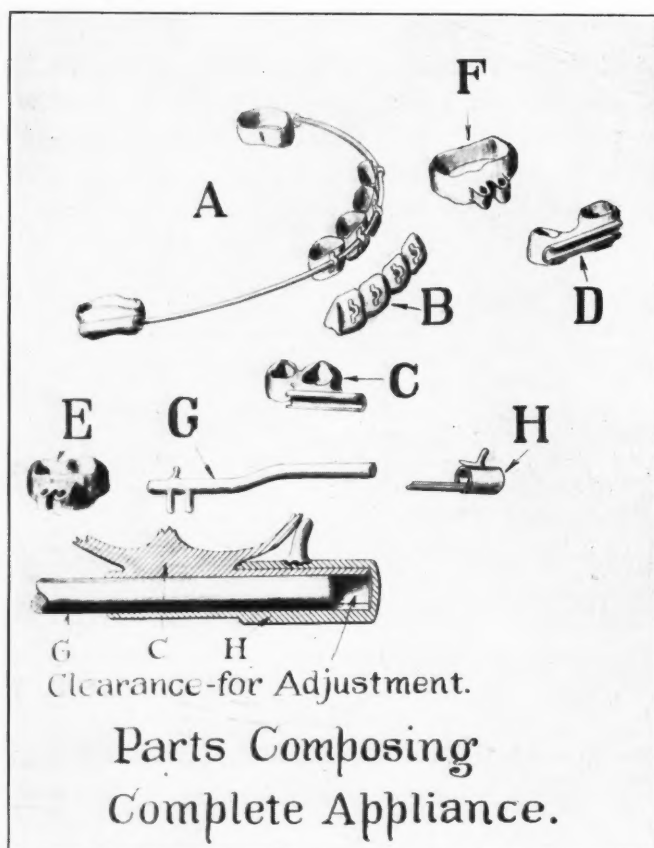


Fig. 10.—Parts composing complete appliance.

For maxillary arch. *a*, Labial arch wire (0.040") with assembled anchor bands and attachments.

For mandibular arch. *b*, Hard gold, one piece, cast overlay for incisors. Hooks on labial open to cervical. *c*, Right premolar bands (united) with open side buccal tube 0.057" bore. *d*, Left canine and first premolar bands (united). Buccal tubing the same as "*c*." *e* and *f*, Right and left molar bands with vertical buccal tubes 0.036" bore. *g*, Truss 0.055" with pins of 0.035" gauge and hold-down lug on distal end. One each for right and left sides to fit into vertical tubes on *e* and *f*. Mesial end to fit in buccal open tubing of *c* and *d*. *h*, Sleeve with hold-down lug and finger for truss. *g-c-h*, Assembled cross sectional view showing clearance, for adjustment.

A longitudinal incision two inches long was made in the shadow line of the jaw, down to, but not including, the periosteum. The external maxillary artery on the right side was cut and both ends were tied.

Tissues were stripped up from the jaw to a point halfway between the lower border and the alveolar crest, both on the buccal and lingual surfaces. The periosteum was divided at that level and all the soft tissues were peeled from the bone, care being taken not to penetrate the mouth cavity at any point. An assistant placed his finger in the mouth of the patient and into the space left by the extraction of the molar, thus guiding a small dull-edged instrument which was introduced through the wound into the center of that space.

With this aid, the copper plate pattern for this side was placed in position and the section to be removed was marked off with a scalpel (Fig. 12).

A crosscut fissure bur, revolved by a dental engine, made both cuts through the external plate; with a chisel the cuts at the lower border were connected and that section of bone was pried out, thus bringing into view the inferior alveolar vessels and nerve. A ligature was passed under these structures and they were tied out of the way (Fig. 13). The remaining portion of the section was removed with rongeurs and bone cutting forceps, after a hole had been drilled through each segment near the lower border for the purpose of immobilization (Fig. 14).

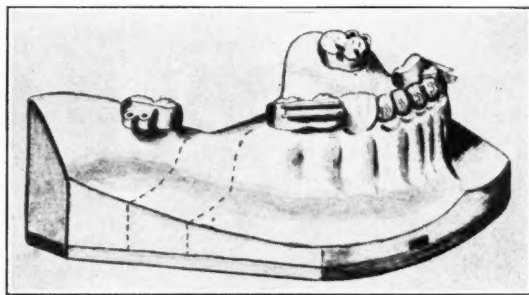


Fig. 11.—Cast with anchor bands as placed before operation.

The same technic was employed on the left side, but on that side the external maxillary artery was dissected and tied and cut between ligatures. In removing this portion of the bone the vessels and nerve were inadvertently cut, so all of the exposed portion was excised.

Instead of silver wire, kangaroo tendon was used for the purpose of holding the fragments in apposition, the ends secured in a hemostat, after the first loop of a surgeon's knot had been adjusted. The other side was finished in the same manner, except that the nerve and vessels were not cut, but instead a groove was made in each fragment, and the nerve and vessels were looped on the buccal surface of the bone.

The anterior fragment was now brought back, and up, so that the teeth occluded; and the teeth were locked in position with the truss, which was fastened with attachments to the bands that had been cemented to the teeth previous to the operation. The kangaroo tendons were tied and the wounds were closed. The cut ends of the bone lined up perfectly, though the lower border of the jaw did not; but no attention was paid to that detail, as good occlusion was paramount (Fig. 15). The occlusion before and after the operation is shown (Fig. 16).

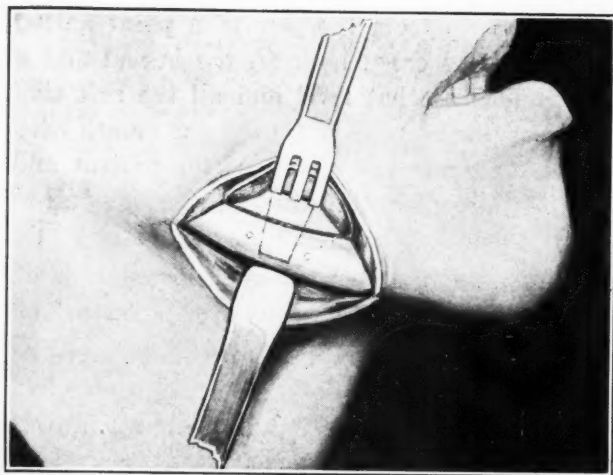


Fig. 12.

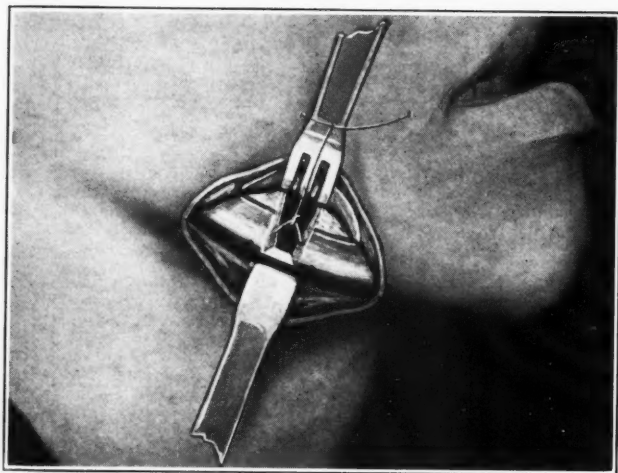


Fig. 13.

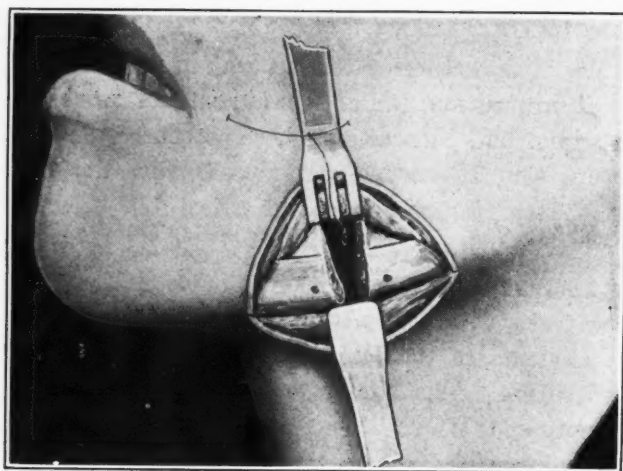


Fig. 14.

Postoperative treatment consisted of the wiring of the lower teeth in occlusion with the upper ones, after all danger of nausea from the ether had passed. At this time the distal end of the truss on the right side was bent lingually, in order to correct the buccal relation of the molars. The application of cold to the wounds, for the first twenty-four hours, was followed by boric acid fomentations, and the mouth was irrigated with hot boric acid solution. There was no elevation of temperature; no swelling; no pain.

On the fifth day the stitches were removed for the prevention of scar formation. On the eighth day the left side became painful, swelled and opened, discharging pus. On the ninth day the right side did the same. The discharge



Fig. 15.

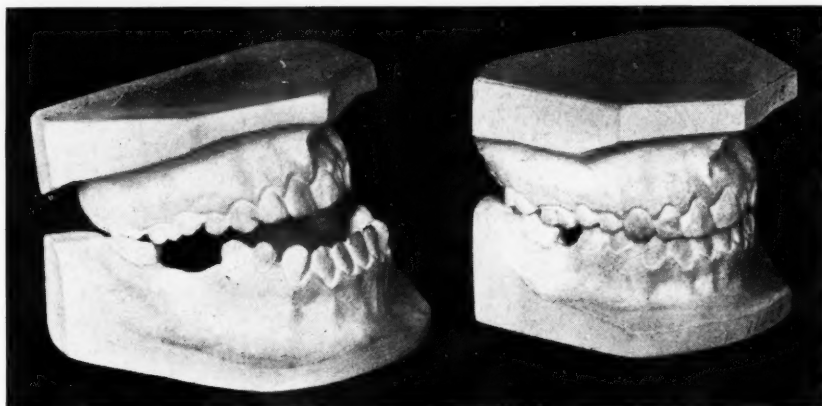


Fig. 16.

on the right side stopped in two days and the wound healed. The left side discharged for a month, when the kangaroo tendon came away, and it healed. A month later, two small sequestra were cast off. Tonus and feeling had returned to the lower lip during the first week, the side where the vessels and nerve had been cut returning to normal in advance of the other.

On August 4, 1925, the patient returned to Peoria for further postoperative treatment and for the safeguarding of the result of the operation thus far. A slight loss in weight had occurred since the operation on June 16. For the



Fig. 17.



Fig. 18.

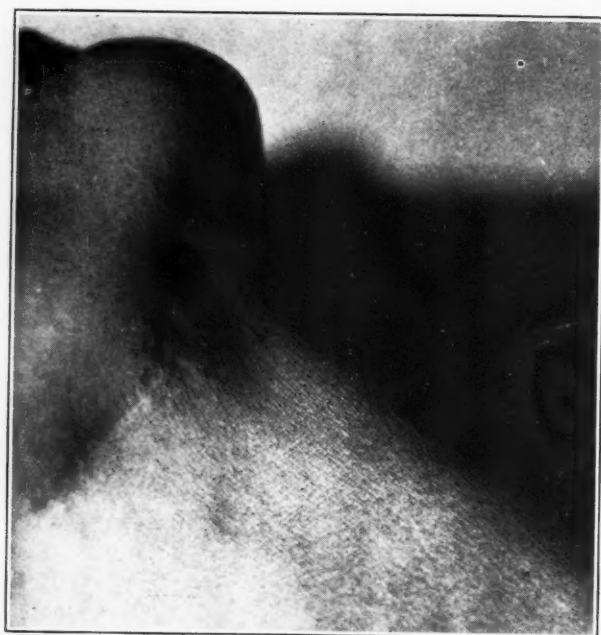


Fig. 17.



Fig. 18.

purpose of improving her nutrition, and hastening the bone repair, directions were given for a semiliquid nourishing diet, and phosphorized cod-liver oil and calcium lactate were prescribed. The patient was advised to exercise freely and to keep in the open air as much as possible.

Twenty-four days later, on August 28 (the date of her next visit), the patient showed a gain of five pounds in weight.

Bone consolidation on the right side gave assuring evidence of a satisfactory union and the appliance was removed from that area without disturbing other parts. As we have heretofore stated, much thought had been given to this feature of the appliance during the time of its construction.



Fig. 19.

The left side of the jaw was inclined to sag and the occlusion of the teeth on that side was not satisfactory. Advantage of the fibrous union was taken, by religating the jaws on that side sufficiently tight to bring the teeth into correct occlusal relation. The parts were thus held in fixation for two weeks. Conditions then seemed to favor a partial retention. On October 24, four months and eight days from the date of operation, all appliances were removed from the teeth. In November the patient's weight had increased to one hundred and eighteen and three-fourths pounds, a gain of nine pounds over her weight as recorded at the time of the operation. The nutritional aid of the cod-liver oil, and other remedial agents, was now dispensed with, the patient was advised to follow a rational diet, and, so far as postoperative treatment

of the deformity was concerned, the patient was dismissed. The operation of removing the external scars at the line of incision was to be performed some months later.

The condition of the scars was the result of the longitudinal incision made in the shadow line of the jaw, and was complicated on the left side on account of the suppuration and the casting off of the small sequestra (Fig. 17; left and right views).

January 11, 1926, seven months from the date of the principal operation, the patient was returned to Dr. Schultz, for the removal of the scars. The



Fig. 20.

wounds made in removing the scar tissue were closed with Halstead's subcuticular suture. The recovery of the patient was uneventful. Only a slight trace of the scar on the left side is visible (Fig. 18).

The comparative views of the facial outline, in profile and full front positions, are convincing proof of the success which attended the surgical and the orthodontic operations for the correction of this case of mandibular deformity (Fig. 19).

The alteration of the despondent lines of the downward drooping mouth, to smiling upward curves, would seem in itself a sufficient cause for the alteration in the mental condition which ensued.

CONCLUSION

In reviewing the results of this surgical-orthodontic correction of a deformity, we find that the threefold aim of the operation was accomplished.

1. The occlusion and the functioning of the teeth were established (Fig. 16).
2. The deformity involving the physical aspect of the features—a question of esthetics—was corrected (Fig. 19).
3. Most important of all, however, was the elimination of the mental complex symptom, by which an inhibitory liability was converted into a growing asset; one of comfort to the patient and to her friends.



Fig. 21.

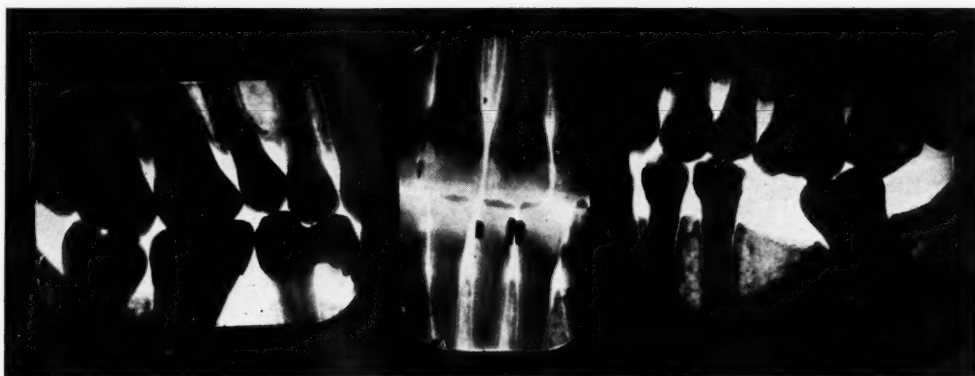


Fig. 22.

A photograph of the patient, in profile, upon which a pantographic drawing has been superimposed, shows an outline of the correction made, and also shows that the change in the reduction of the chin was ten millimeters (Fig. 20), corresponding to the patterns used, and the survey of predetermination (Fig. 7).

A later view of the field of operation shows the bone union in its present condition, the occlusion of the teeth, and the rounding off of the sharp corners of the anterior fragments, as it was necessary to leave them in adjustment for better occlusion of the teeth (Figs. 21 and 22).

Although much preliminary study had been given to this case, and the preparation of the patient for the operation most carefully planned, we admit errors of technic, or at least that some of the surgical and orthodontic technic involved would be applied in a different manner if our steps could be retraced.

One change would be in the mechanism of connecting up the mandibular appliance, where the truss, in assembling, was first anchored in the molar buccal tubing, which was held in place by the hold-down lug when the wire ligature was applied.

This arrangement seemed very simple indeed, in the process of assembling that part when the appliance was mounted on resected plaster models on the metal track base; but it proved to be anything but simple when it came to the

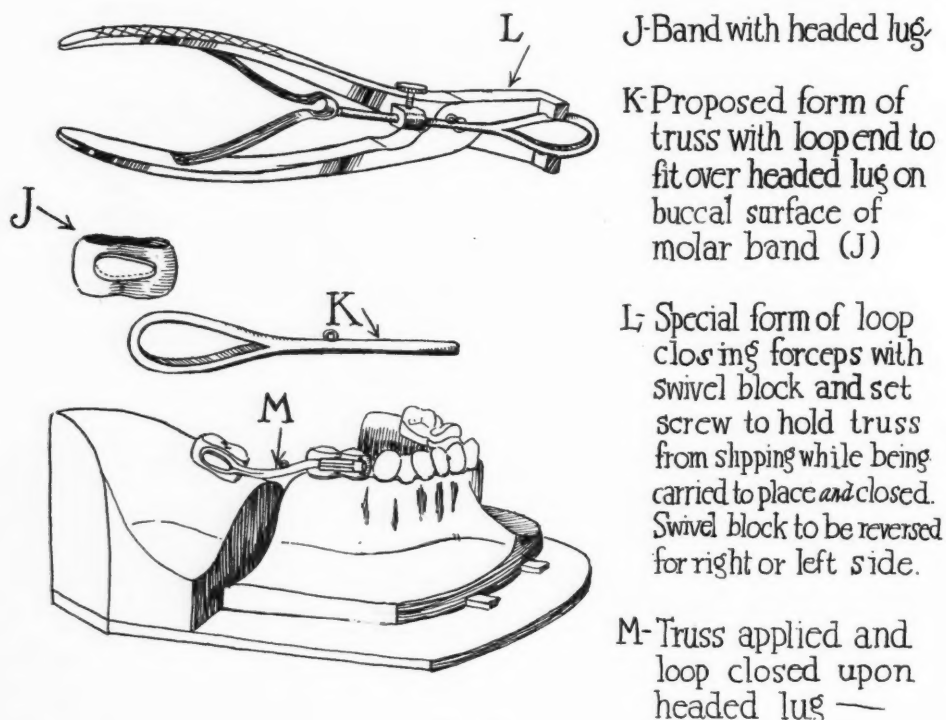


Fig. 23.

making of that adjustment of the truss in the immobilization of the fragments, with the patient on the operating table; and its use was further complicated by mouth conditions following two hours of anesthesia and operation.

As a suggestion to any operator who might copy our type of post-maintenance appliance, for a like or similar purpose, we ask that careful attention be given to the revised construction of the truss and its attachment in connecting with the molar anchorage (Fig. 23). Instead of passing the wire ligature over the buccal attachment on the molar anchorage, as was done in the appliance used in the correction of this case, the eyelet shown on the truss may be used to ligate the truss in place. This, it seems to the writer, should prove far less difficult of adjustment, while giving as firm a connection as the vertical pins and tubes.

Dr. Schultz now realizes that the type of post-maintenance used would have proved sufficient for the fixation of the jaw fragments, and that the boring of holes in the lower border of the jaw, and the use of kangaroo tendon, which was the cause of the only complication attending the correction, could therefore have been avoided.

With this hazard eliminated, the correction of cases of this type of deformity becomes a matter of wisdom and infinite patience in the orthodontist's preparation of his patient; and of anatomic knowledge and applied manual skill in the surgical operation.

DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Edited By
Clarence O. Simpson, M.D., D.D.S., F.A.C.D.,
and Howard R. Raper, D.D.S., F.A.C.D.

A METHOD OF MOUNTING FOR DIAGNOSTIC X-RAY FILMS*

BY WILLIAM A. MURRAY, D.D.S., EVANSTON, ILL.

A FOLDER is made by taking two celluloid film mounts and fastening them together with art tape. The tape is glued around each mount in such a manner that one mount will fold over the other.

On the upper film mount are placed the small films of individual areas; usually eight to ten are sufficient. On the lower mount are placed two lateral jaw films, a right and a left. The small films give information about individual teeth while the larger ones give a general view and reach back into the regions around the second and third molars. These mounts fold up and are very compact for filing.

The accompanying figure illustrates the folder.

*Clinic before the First International Orthodontic Congress, New York City, August 16-20, 1926.

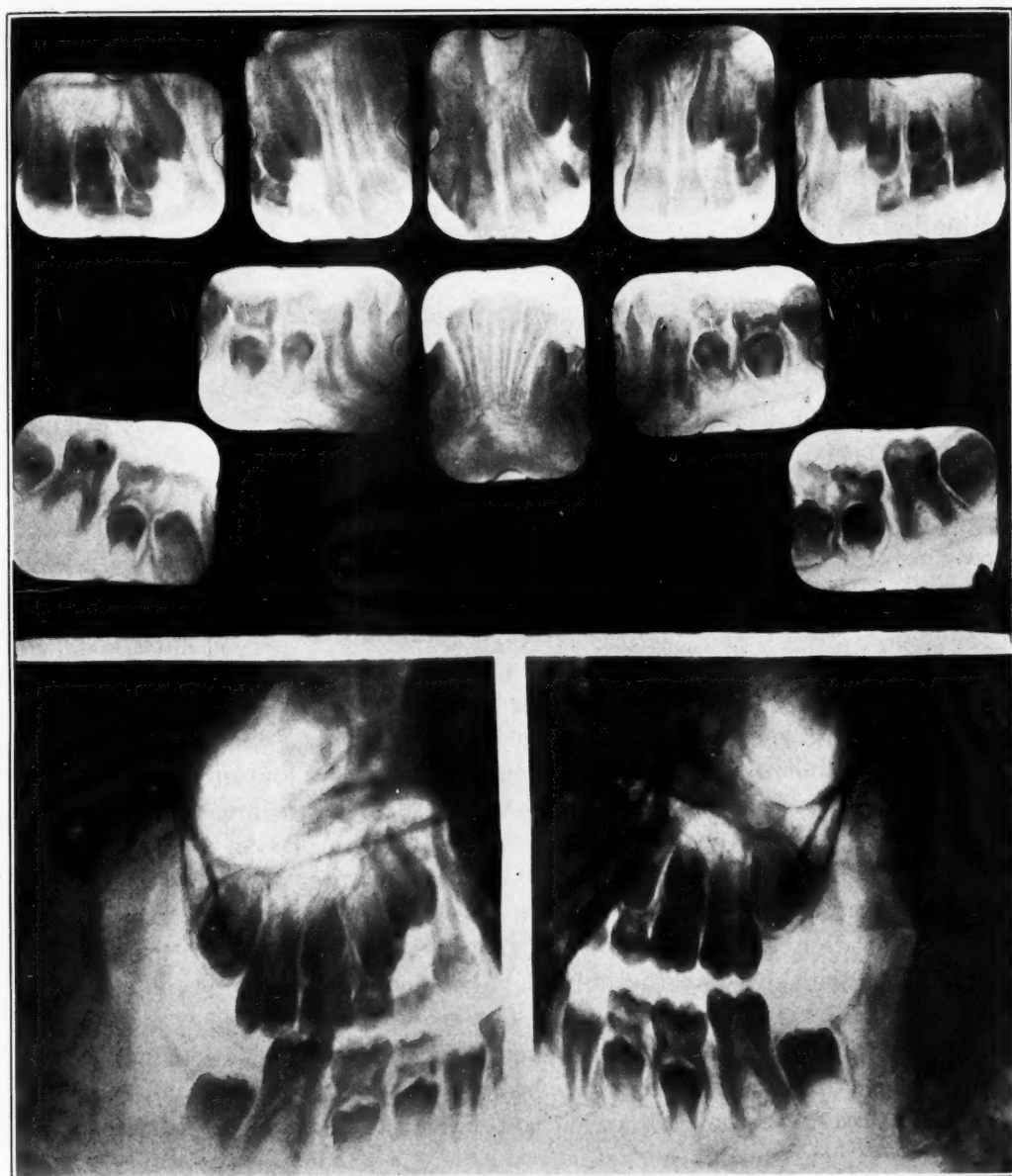


Fig. 1.

ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

Actinotherapy in the Treatment of Abscessed Teeth. I. L. Folstein (New York). The American Dental Surgeon, July, 1926.

We know concerning the action of the ultraviolet rays that the blood is drawn from the interior to the surface; that the red corpuscles are increased in number with a proportional increase in the oxygen carried to the cells; that the phagocytosis action of the white corpuscles is increased; that calcium and phosphorus metabolism is increased with improved nutrition of bone; that an analgesic or obtunding action is exerted and that bacteria are destroyed. From the clinical standpoint we may see a tooth, a roentgen plate of which will show an apical disturbance, with discoloration and looseness of the tooth and perhaps swelling of the face and later a chronic root abscess, which tooth ordinarily would be extracted. The case might seem hopeless for saving the tooth, yet this may be done by the use of the ultraviolet rays in association of course with proper treatment of the root. Formerly before the light treatment came into use these teeth were saved only in a very small percentage but now, thanks to the light treatment addition, the percentage is inverted and in place of saving but one in twenty or so the treatment is successful in nearly every case. When a patient consults with an abscessed tooth the author makes an x-ray plate and first as a rule he opens the pulp cavity, thus giving exit to pus, either at once or after having entered the canal with a fine broach. On the following day an attempt is made to evacuate the rest of the pus and then the light treatment is applied. On the third day the pulp chamber and canals are evacuated and a temporary filling made, with another session of the rays. The author then goes ahead with the mechanical treatment and light in association, with x-ray control and after the former is finished continues to make use of the light which acts to relieve the pain which sometimes persists. He adds case histories and roentgenograms.

"Dead" Teeth. Editorial in the Journal of the American Dental Association, March, 1926.

The editor would do away entirely with this dental expression for it has been and will be responsible for the loss of many useful teeth. A "dead" tooth simply meant a tooth which must come out. It is natural for the public, too, to wish to be rid of any part of their bodies which is "dead." What is meant usually by a dead tooth is a pulpless tooth, but if this has a good peri-

cemental attachment to the alveolar process, it is by no means dead. A pulpless tooth no longer feels the pain of the dentists' instruments and this analgesia was hastily assumed to be equivalent to death. Dentists have for many years called these teeth pulpless, but physicians call them "dead" and the dentist does not usually take the trouble to correct them. But even without the histologic evidence just mentioned the mere fact that "dead" teeth and roots often remain in the alveoli for very many years without making the least trouble should entitle them to the use of a better adjective than "dead." The term pulpless applies equally here even if histologically the tooth may be technically dead. The dentist should invariably correct the medical men and laymen alike and do all that is possible to eliminate the objectionable adjective from both technical and colloquial speech.

Prevention of Cancer by the Dentist. Editorial in Dental Items of Interest, August, 1926, xlviii, 8.

The editorial was inspired by one of the original articles in the same issue by Dr. F. E. Clow. The chief point at issue is the responsibility of the dentist in cases of incipient oral cancer, and especially of precancerous lesions like leucoplakia. The editor states that twenty-five years ago he first heard of this affection in an illustrated lecture and soon afterward recognized a case in one of his dental patients. The lesion on the tongue disappeared when smoking was discontinued and after painting with iodine, but reappeared when the man resumed smoking and was again conquered in the same fashion. Finally there was no response to the treatment and cancer had developed with fatal termination. Since that period he has always warned his patients with leucoplakia to have this condition attended to by specialists and this commonly led to recovery unless the ulcerous stage had been reached. Other lesions which were very likely precancerous—papillomatous growths—have similarly been removed at the editor's suggestion.

Hidden Menaces in Diet. J. A. Pollia (Los Angeles). The Pacific Dental Gazette, August, 1926, xxxiv, 8.

The public has recently become increasingly interested in diet, especially in connection with the reduction of weight and the proper care of childhood. The knowledge thus obtained is not harmonious for there is more or less disregard of certain dangers which proceed from foods, either of omission of essential ingesta or the presence of deleterious impurities in food. The need of maintenance of an alkaline reserve for perfect health has been studied especially in California and it has been shown that a diet selected from this standpoint is of value in lowering high blood pressure. As yet but few textbooks have tables of alkali formers and acid formers. The old superstition that red meat is much more harmful than white has been routed anew by the discovery that it is the white meats which are acid formers. There is a possible menace connected with each of the food staples. With milk it is the danger of pasteurization in certain associations and of accidental contamination with especial reference to a few contagious diseases. Beef and pork may harbor parasites like the trichina and forms of tapeworm. Salad vegetables contain oxalic acid.

The old idea of ptomaine poisoning, in which the toxic principle is a pure chemical decomposition product which can be isolated, has given way to the generalization that food poisoning means simply food infection with bacteria—a sort of cholera in miniature. Botulism has probably been abolished by new canning regulations. Although the author's paper was read before a dental society and discussed by physicians and dentists jointly very little allusion was made to the relations between diet and dentistry.

Systemic and Dental Conditions in Dental Students. F. P. Wisner (San Francisco). *The Pacific Dental Gazette*, July, 1926, xxxiv, 7.

The author investigated 14 dental students in respect to caries and periodontia and found the former present in 11, of which 7 were "2 plus," and the latter in 10 with 4 "2 plus" and 2 "3 plus." In regard to nondental conditions there were 4 cases of baldness, 4 of infected tonsils, 3 with septum anomalies and 2 with acne. Various other disorders occurred in scattering incidence and but one of the 14 is unmarked with any kind of abnormality although odd to relate he had a "2 plus" caries and periodontia. One student showed baldness, infected tonsils, inguinal hernia and caries and periodontia each "2 plus" and several of the others showed the same multiplicity of affections. The author's own conclusions are that students without ordinary medical defects may present serious dental defects while those with the worst systemic picture may or may not have corresponding dental defects, there being no general law. In other words there is no correlation at all between systemic and dental defects. There is a slight accord between periodontia and skin anomalies which merits a further study. Study of the author's table does not appear to show anything positive concerning focal infection, for one student with cholecystitis had sound teeth. A possible exception is a case of chronic appendicitis in a student with both marked caries and periodontia.

Pyorrhea Among the Hindus. H. R. Hunter. *The Indian Dental Journal*, September, 1926.

The Hindu is mostly a vegetarian who is underfed and is inclined to bolt his food because he is ravenous and has not much time at his disposal. He partakes freely of strong condiments and this causes irritation of the gums and most of the Hindus chew the betel leaf in association with lime. The salivary glands are constantly stimulated and there is much salivary calculus which tends to denude the roots of the teeth. Both forms of calculus, the serumal and salivary, may be recognized. For some reason conditions which in the West produce caries seem in the East to cause only pyorrhea. The Hindu, for whatever cause, shows comparatively little caries and recently in a series of 71 Hindu patients the author found but 17 cavities to fill. Nor does he mention focal infection in this connection even in the pyorrhea patients who have troubles of their own in anemia and malaria. He does speak of a form of autointoxication from abuse of the extemporaneous Hindu toothbrush which is a twig from the Neem or Babool tree and serves as tongue scraper, toothbrush, dentifrice and masseur. When so roughly employed as to lacerate the gums absorption phenomena are seen to follow.

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EDITORIALS

The First International Orthodontic Congress

THE First International Orthodontic Congress held at the Hotel Commodore, New York City, August 16 to 20, 1926, is now a matter of history. It was beyond question the largest professional meeting ever held by any specialty of dentistry. It was well attended by men from abroad in spite of the fact that various conditions, including financial exchange rates, worked against a large attendance from Europe.

Too much credit for the success of the meeting cannot be given to the President, Dr. William C. Fisher, whose conscientious efforts, painstaking work and personal sacrifices, made the meeting possible. The entire plan of the Congress was the idea of Dr. Fisher, who during the preliminary organization of the Congress, made a trip to Europe to visit the various orthodontic societies to interest them in the Congress. This trip was made at his personal expense and sacrifice of his time. It must not be forgotten that a large

amount of the success of the Congress was due to the committee on local arrangements. We must mention Dr. C. A. Spahn, Dr. Jos. D. Eby, Dr. L. M. Waugh, and Dr. Oscar Carrabine all of whom performed important services in arranging for the meeting, providing entertainment, and conducting the banquet. Commendation is due Dr. Geo. B. Palmer who had charge of the registration, for the lack of confusion and wonderful working facilities that prevailed at the registration booth. We cannot neglect to mention the valuable work done by the program committee of which Dr. C. A. Hawley was chairman, and Dr. J. D. Eby, secretary. Many other men who were members of local committees are also entitled to a word of praise. The clinics and educational exhibits were practically arranged and secured by Dr. Oren A. Oliver and Dr. William E. Flesher. The permanent educational exhibit was a rather new and unique idea in orthodontic meetings and we believe it was one of the most valuable educational features of the Congress.

In regard to scientific papers, the officers of the Congress had worked out a very careful plan for the presentation of these papers, but as is often the case in the presentation of scientific programs, it was not carried out to the satisfaction of everyone concerned. This was not the fault of the officers but of the essayists. Evidently a great many men believed that their papers were the only ones to be given. Other essayists seemed to believe that the value of their papers was judged by the number of typewritten pages they had the strength to read. Consequently they imagined they could consume much more time than was set aside for the presentation of any one paper. This, of course, caused the program to run behind the schedule, but the "officers of the day" were often able to save the situation because some essayist would be absent and the paper would be read by title only. Another unfortunate thing which developed in the presentation of the scientific program resulted from the fact that the program committee had selected certain men to read papers on particular subjects, and in some instances the men selected presented practically the same papers which they had given on previous occasions. As a result of this repetition of material presented, a great deal of time at the Congress was consumed which we believe could have been better utilized by having essayists present papers which had not been given before and which would have been more interesting to a large number of the audience.

Another unfortunate condition arose in spite of the efforts of the officers because certain essayists did not live up to the rules and regulations of the Congress, wherein each essayist and discussor was supposed to give his paper and all illustrations to the secretary of the Congress immediately after presenting it. The officers of the program committee had tried to make it very clear that all papers and discussions would become the property of the Congress and were to be delivered to the officers immediately after the presentation in order that publication would not be delayed. For several years past those who have had charge of the publication of proceedings of orthodontic societies have been criticized because of the length of time that elapsed after the holding of the meeting until the proceedings were published and in the hands of the members. No one was more familiar as to the cause of this delay than was Dr. C. A. Hawley, chairman of the committee. But in spite of the

careful plans which the program committee and the officers of the Congress had outlined, we found certain essayists did not follow the rules. Consequently the efforts of the officers of the Congress will be defeated to a certain extent because delayed publication will necessarily result.

The banquet which was given to the visiting members by the American Society of Orthodontists was one of the best arranged and handled banquets we have ever attended. This was due to the wonderful management of Dr. L. M. Waugh and his banquet committee as well as the proficient manner in which the toastmaster, Dr. William C. Fisher, conducted the banquet.

We do not know what plans were made for a future Orthodontic Congress but we imagine the officers and Board of Directors have some plan similar to that followed by the International Dental Federation whereby the organization can be kept together and arrangements can be made for the Second International Orthodontic Congress which should be a greater success than the one which has been just held.

What's the Matter with the American Dental Association?

THE American Dental Association virtually is a continuation of the National Dental Association as it was known to the profession since 1897. Prior to that time a national body had existed as the American Dental Association which was organized at Niagara Falls, New York, August 3, 1859. The American Dental Association as it is known today was created by a Certificate of Incorporation, No. 5479, granted by the Secretary of State of the State of Illinois, the 19th day of June, 1922. As a result of that Certificate of Incorporation, the American Dental Association as it exists today was created, and retained a great many of the principles of government as were formulated by the reorganization of the National Dental Association in 1913; a set of constitutional and administrative by-laws were written, a great many principles of which were carried into the incorporation of the American Dental Association in 1922. One of the important principles mentioned in the Certificate of Incorporation is found in Section 3 which states, "The management of the aforesaid American Dental Association shall be vested in a board of thirteen directors to be known as Trustees." Article X of the constitutional by-laws states, "Three trustees shall be elected annually by the House of Delegates, each to serve for a period of three years." By all the rules of mathematics that we are familiar with, three times three makes nine, while the Certificate of Incorporation says there should be thirteen directors. However, we find this is cleared up, at least to the satisfaction of the officers of the Association, by referring to Article V of the constitutional by-laws which deals with the House of Delegates. We find in the fifth sentence of Section 1 that somebody played a joke on the House of Delegates by including in that article, which deals with the duties of the House of Delegates this clause, "and elect the general officers of the Association, and nine trustees, who, with the president, the president-elect, the general secretary and the treasurer shall constitute the Board of Trustees." The president, the president-elect, the general secretary

and the treasurer should be ex-officio members of the Board of Trustees. However we find them as the extra four added to the nine which are elected for three years in order to fulfill Article 3 of the Certificate of Incorporation, thereby making thirteen members of the Board of Trustees. We find that we now have trustees who serve varied periods of time. This difference in the length of office of the trustees is in itself a bad executive feature. In the administrative by-laws, Chapter VIII which deals with the duties of the officers, we find no mention made that the president, the president-elect, the general secretary or treasurer shall be members of the Board of Trustees. We wonder why, if the four elected officers mentioned were to be members of the Board of Trustees, this qualification was named under the duties of the House of Delegates? We also think that the Board of Trustees should be composed of men whose term of office is the same length. Nine members of the Board of Trustees are elected to serve for three years. The president-elect, by virtue of his succeeding the president, serves two years. The general secretary and treasurer are elected annually and therefore legally serve for one year. However, in view of the fact that the American Dental Association for the past fourteen years has elected the same secretary, and I think the treasurer has served a greater period of time, these two men are virtually perennial members of the Board of Trustees. We have no criticism as to the services rendered by the secretary or treasurer but by being perpetual members on the Board of Trustees, an autocracy is created, and they, with the president, assume much more authority than they are given under the administrative by-laws as described in Chapter VIII.

It must also be remembered that the United States in accordance with Chapter VII of the administrative by-laws, is divided into nine districts. This division was made when the membership of the American Dental Association was much smaller than it is at the present time. It was made also at a time when the financial responsibility of the Board of Trustees was much less than it is now. We believe the actual letter of the law of Section 3 of the Certificate of Incorporation should be carried out by redistricting the United States of America, so as to create thirteen districts, each district to have a trustee to serve for a period of three years, and allow the elected officers to be ex-officio members of the Board of Trustees.

We realize, however, that for a number of years the business of the American Dental Association has been transacted with very little regard for the articles of incorporation or the constitutional and administrative by-laws. In this issue of the Journal is published the officers of the American Dental Association as furnished to us by the secretary of the American Dental Association. You will notice under the Board of Trustees the name of R. H. Volland appears as president-elect and also as trustee from the seventh district. Virtually then and according to the list of officers there are but twelve men on the Board of Trustees and the Certificate of Incorporation says there must be thirteen. This condition arose from the fact that Dr. Volland, who was honored at the meeting in Philadelphia by being made president-elect, is trustee of the seventh district. If the officers of the American Dental Association desire to conduct the affairs of the organization according

to the constitutional and administrative by-laws they would find under Chapter VIII, Section 1 of the administrative by-laws, this statement: "In the event of the death, resignation, removal from a district or election to another office of a Trustee, the President shall have authority to fill such vacancy by the appointment of a person from the district where the vacancy occurs, to serve until a successor is chosen at the next annual session." Of course, we realize that the section referred to, does not say the president must fill the vacancy and therefore it gives the president a chance to interpret according to his own wishes, Chapter VIII, Section 1, of the administrative by-laws, as has been done previously by other presidents and officers. However, it was clearly the intent of the House of Delegates that when a member of the Board of Trustees was elected to another office, the appointment should be made at once because it states that the man appointed shall serve until a successor is chosen at the next annual session. Therefore, upon the election of Dr. Volland as president-elect, the office of trustee from the seventh district automatically became vacant and another man should have been appointed to that office to make the thirteen trustees as is now required according to the interpretation of the articles of the Certificate of Incorporation and by Article V of the constitutional by-laws.

Another thing that seems to be the trouble with the American Dental Association is the inability of the officers to learn from previous experiences. Chapter IX, Section 10, of the administrative by-laws states that the Board of Trustees shall have full control of all arrangements for annual sessions and shall provide meeting places for the Association and the House of Delegates and the various sections. This leaves the arrangements for the meetings of the American Dental Association and the various sections in charge of the Board of Trustees. However, the Board of Trustees has failed to profit by mistakes which had been made in time past. We need only to call attention to the meeting in Boston, to refresh the minds of many to the large amount of confusion and almost impossibility of holding meetings of the various sections, because of the impossible arrangement. Attempt had been made to hold all the meetings of the sections in one building. The arrangements were so miserable that the chairman of the section of Oral Surgery refused to hold a meeting of his section at the place provided for him. The meeting at Milwaukee was ideal because facilities had been provided for the various sections, whereby the noise from one section did not interfere with the other sections. At Dallas another attempt had been made to hold all the section meetings under one roof with the result of confusion almost as bad as that in Boston. Of course, the Board of Trustees did not have absolute control of the meetings of the various sections at the Congress in Philadelphia. However, the officers of the Congress should have been familiar with what happened at Boston and Dallas.

Nevertheless, instead of profiting by past experiences in the American Dental Association, we found that the scientific sections of the Dental Congress were again so arranged that the conduct of the business of one section interfered with other sections. Experience has demonstrated that the scientific sections in the American Dental Association can only be satisfactorily

conducted when they are so arranged that the business of one section will not interfere with that of another.

Realizing the demands for suitable meeting places for the American Dental Association, and as the Board of Trustees passes on the desirability of the meeting places and has control of the arrangements for annual sessions and also has power to change the place of meeting as selected by the House of Delegates, according to Article VIII of the constitutional by-laws; we hope the Board will profit by mistakes in the past and see that arrangements will be made in Detroit to avoid a repetition of what occurred at Boston, Dallas and Philadelphia.

At the meeting in Louisville changes were made to the constitutional and administrative by-laws and standing resolutions were adopted for the purpose of placing the management of the American Dental Association on a more business-like basis. The adoption of a budget system was advocated and legalized. However, it again appears that commissions and officers of the American Dental Association evidently believe that constitutional and administrative by-laws and the action of the House of Delegates can be obeyed or kicked aside according to their wishes. At the meeting in Louisville, in 1925, the following resolution was recommended by the Board of Trustees and passed by the House of Delegates: "RESOLVED, that all commissions of this Association requesting funds for carrying on the work of this Association must present their financial requirements for the ensuing year to the Board of Trustees, sufficiently in advance of the Annual Session of this Association that these requests may receive careful consideration by the Board of Trustees for the preparation of a budget. This budget shall be printed and presented to the House of Delegates for their approval and shall be acted on at a subsequent meeting." It will be seen that according to this resolution, the budget was to be printed and presented to the House of Delegates for their approval and should be passed on at a subsequent meeting. At the meeting in Philadelphia no part of this resolution was lived up to. First, the budget was not printed and presented to the House of Delegates. It was only read by the secretary at the last meeting of the House of Delegates and it was therefore impossible for the House of Delegates to give the budget the careful consideration that it should have received. There is absolutely no excuse for any of the committees, commissions or officers of the American Dental Association not complying with the resolution passed by the House of Delegates unless it is a matter of ignorance, willful omission or the attempt of some commissions to occupy a higher position than that given them by the House of Delegates. Dr. Foster during the meeting of the House of Delegates made a statement that he did not see how committees or commissions could expect to receive an appropriation when they did not present a report to the House of Delegates. This statement was made because various committees and commissions delayed bringing in their reports regardless of the fact that the order of business as printed, stated when each committee or commission was to report. Moreover the president repeatedly called for these reports day after day. He had great difficulty in getting them presented before the closing of the session of the House of Delegates. There are certain committees in the American

Dental Association who seem to think that their actions are beyond the control of the American Dental Association. Their financial statements and reports are prepared in such a manner as to make it impossible for any one to understand what has been done with the money appropriated to them by the House of Delegates. As one man who has sat in the House of Delegates for a number of years, said, "The reports of some of the officers and committees are wonderful for what they conceal."

If the American Dental Association is ever going to be a representative body of the dental profession, it must be conducted in a manner that is open and above board, the first act of which will be that the various commissions and officers must conduct their affairs in accordance with the articles of the Certificate of Incorporation, the constitutional and administrative by-laws and the standing resolutions as passed by the House of Delegates.

ORTHODONTIC NEWS AND NOTES

The American Society of Orthodontists

The next meeting of the American Society of Orthodontists will be held in Chicago, May 3, 4, 5 and 6. A splendid program is assured. All ethical members of the American Dental Association will be cordially welcome. For further information address—Charles R. Baker, Secretary-Treasurer, 708 Church Street, Evanston, Illinois.

Japanese Society of Orthodontists

We are in receipt of a letter from Dr. H. Iwagaki informing us of the organization of the Japanese Society of Orthodontists in Tokio on August 14. Further detail of the organization is not available.

Officers and Committees of the American Dental Association for 1927

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DENTAL INDEX

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(Elected and appointed by the Seventh International Dental Congress at Philadelphia, 1926.)

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Otto U. King, Assistant Secretary, F. D. I.	58 E. Washington St., Chicago, Ill.
L. Pierce Anthony	211 S. 12th St., Philadelphia, Pa.
H. J. Burkhart	Box 35 E. Ave. P. O., Rochester, N. Y.

NATIONAL RESEARCH COUNCIL REPRESENTATIVE

Weston A. Price	8926 Euclid Ave., Cleveland, Ohio
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Testimonial Banquet to Dr. George B. Winter of St. Louis

The St. Louis Dental Society, one of the oldest in this country, will honor Dr. George B. Winter with a testimonial banquet on Monday evening, December 6, 1926, in recognition of his research work done on the impacted mandibular third molar.

Address all communications to Dr. J. F. Alcorn, President, Metropolitan Bldg., St. Louis, Mo.

Notes of Interest

Doctor Frederick Lester Stanton has been appointed Professor of Preventive Dentistry in the new New York University College of Dentistry. Occlusion will be taught as a fundamental subject. In Doctor Stanton's clinic only children with sound teeth under eight years of age will be accepted for preventive orthodontia.

Dr. Richard H. Stucklen announces the opening of his office at 218 West Tenth Street, Wilmington, Delaware. Orthodontia exclusively.

Doctor George B. Palmer announces the removal of his office to 4 East Forty-first Street, New York City.

Dr. Charles Vetter announces his association with Dr. Bertram R. Perkins, Forty East Forty-first Street, New York City. Exodontia, oral surgery, radiography and diagnosis exclusively.